

REPORT OF SCIENTIFIC COUNCIL MEETING

5-19 June 2003

Chair: Ralph K. Mayo

Rapporteur: Tissa Amaratunga

I. PLENARY SESSIONS

The Scientific Council met at the Alderney Landing, 2 Ochterloney Street, Dartmouth, Nova Scotia, Canada, during 5-19 June 2003, to consider the various matters in its agenda. Representatives attended from Canada, Denmark (in respect of Faroe Islands and Greenland), European Union (France, Germany, Portugal, Spain and United Kingdom), Japan, Russian Federation and United States of America. The Deputy Executive Secretary, Tissa Amaratunga, was in attendance and the Executive Secretary, Johanne Fischer, attended when available.

The Executive Committee met prior to the opening session of the Council, and the Provisional Agenda, plan of work and other related matters were discussed.

The opening session of the Council was called to order at 1015 hours on 5 June 2003.

The Chair welcomed everyone to Dartmouth and to this venue for the June Meeting. The Chair particularly welcomed the new Executive Secretary, and noted that she would make a presentation of the new NAFO website as well as address the Council on some agenda issues. The Executive Secretary then made an introductory address to the Council.

The Deputy Executive Secretary was appointed rapporteur.

The Deputy Executive Secretary informed the Council that prior to the meeting, authorization had been received for proxy votes from Latvia and Norway to record their abstentions during any voting procedures.

The Council noted it had invited one observer from FAO of the UN to attend this meeting, to address some STACREC agenda items.

The Chair noted that this is the election year for the officers of The Council and its Standing Committees. The Council was informed that a Nominating Committee consisting of three Contracting Party representatives, Bruce Atkinson (Canada), Antonio Vazquez (EU) and Fred Serchuk (USA), will consult the Council participants and make proposals for the nominations before the closure of this meeting.

Having reviewed the work plan for each Agenda item, the opening session was adjourned at 1045 hours.

The Council through 6-19 June 2003 addressed various outstanding agenda items as needed. The Standing Committee reports were **adopted** through the course of the meeting.

The concluding session was called to order at 1015 hours on 19 June 2003.

The Council considered and **adopted** the Report of the Scientific Council of this meeting of 5-19 June 2003, noting changes as discussed during the reviews would be made by the Chair and the Deputy Executive Secretary.

The meeting was adjourned at 1145 hours on 19 June 2003.

The Reports of the Standing Committees as **adopted** by the Council are appended as follows: Appendix I – Report of the Standing Committee on Fisheries Environment (STACFEN), Appendix II – Report of Standing Committee on Publications (STACPUB), Appendix III – Report of Standing Committee on Research Coordination (STACREC) and Appendix IV – Report of Standing Committee on Fisheries Science (STACFIS).

The Agenda, List of Research (SCR) and Summary (SCS) Documents, List of Representatives and Advisers/Experts are given in Appendix V, VI and VII, respectively.

The Council's considerations on the Standing Committee Reports, and other matters addressed by the Council follow in Sections II-XVI.

II. REVIEW OF SCIENTIFIC COUNCIL RECOMMENDATIONS IN 2002

The Council noted recommendations made in 2002 pertaining to the work of the Standing Committees were addressed directly by the Standing Committees, while recommendations pertaining specifically to the Council's work will be considered under each relevant topic of its Agenda.

III. FISHERIES ENVIRONMENT

The Council **adopted** the Report of the Standing Committee on Fisheries Environment (STACFEN), as presented by the Chair, Eugene Colbourne. The full report of STACFEN is at Appendix I.

STACFEN made no formal recommendations during this 2003 meeting.

IV. PUBLICATIONS

The Council **adopted** the Report of the Standing Committee on Publications (STACPUB) as presented by the Chair, Manfred Stein. The full report of STACPUB is at Appendix II.

STACPUB made no formal recommendations during this 2003 meeting.

V. RESEARCH COORDINATION

The Council **adopted** the Report of the Standing Committee on Research Coordination (STACREC) as presented by the Chair, Joanne Morgan. The full report of STACREC is at Appendix III.

The **recommendations** made by STACREC for the work of the Scientific Council as **endorsed** by the Council, are as follows:

1. *the Notes for Completion of STATLANT 21A and 21B questionnaires be revised to include the requirement for national authorities to report the absence of fishing activities.*
2. *the Deputy Executive Secretary attend the CWP Intersessional Meeting to be held in 2004.*
3. *the observer data be collected and archived on a set by set basis in a format consistent with SCS Doc. 00/23, as adopted by the Fisheries Commission, including all identifiers but that the data be made available to users without any identification of vessel name or country. Rather a unique identifier will be associated with each vessel and country and the user will not have access to the key to this code.*
4. *in 2004 the summed abundance and biomass based on conversion of the length frequencies be presented for American plaice, cod, Greenland halibut and yellowtail flounder in the Div. 3NO surveys conducted by EU-Spain, and these be compared to the estimates from the method used to convert the CPUE.*

VI. FISHERIES SCIENCE

The Council **adopted** the Report of the Standing Committee on Fisheries Science (STACFIS) as presented by the Chair, Don Stansbury. The full report of STACFIS is at Appendix IV.

The Council endorsed **recommendations** specific to stock considerations and they are highlighted under the relevant stock considerations in the STACFIS Report at Appendix IV.

VII. MANAGEMENT ADVICE AND RESPONSES TO SPECIAL REQUESTS

1. Fisheries Commission (Annex 1)

For stocks within or partly within the Regulatory Area, the Fisheries Commission requested the following scientific advice.

a) Request for Advice on TACs and Other Management Measures for the Year 2004

The Scientific Council and the Fisheries Commission during the Annual Meeting of September 2002 agreed to consider certain stocks in 2004. This section presents advice for which the Scientific Council provided scientific advice for 2004 during this meeting.

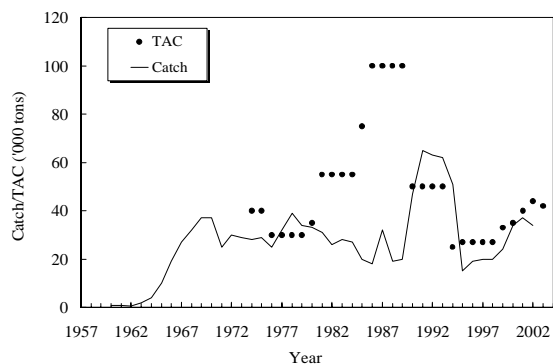
Greenland Halibut (*Reinhardtius hippoglossoides*) in Subarea 2 and Divisions 3KLMNO

Background: The Greenland halibut stock in Subarea 2 and Div. 3KLMNO is considered to be part of a biological stock complex, which includes Subareas 0 and 1.

Fishery and Catches: Catches increased sharply in 1990 due to a developing fishery in the NAFO Regulatory Area in Div. 3LMNO and continued at high levels during 1991-94. The catch was only 15 000 to 20 000 tons per year in 1995 to 1998 as a result of lower TACs under management measures introduced by the Fisheries Commission. The catch increased since 1998 and by 2001 was estimated to be 38 000 tons, the highest since 1994. The estimated catch for 2002 was 34 000 tons.

Year	Catch ('000 tons)		TAC ('000 tons)	
	STACFIS	21A	Recommended	Agreed
2000	34	32 ¹	~30	35
2001	38	29 ¹	40	40
2002	34	29 ¹	40	44
2003	-	-	36	42

¹ Provisional.

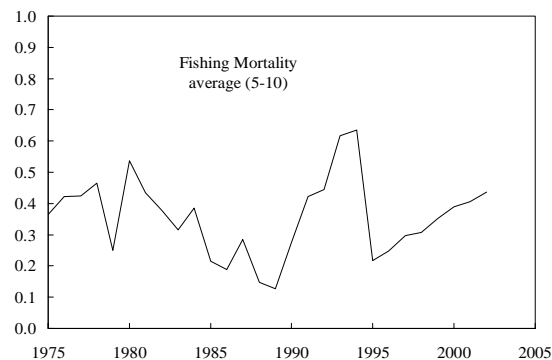


Data: CPUE data were available from international otter trawl fisheries throughout the stock area and the Portuguese otter trawl fishery in the NAFO Regulatory Area of Div. 3LMN. Abundance and biomass indices were available from research vessel surveys of Canada in Div. 2J+3KLMNO (1978-2002), EU in Div. 3M (1988-2002) and EU-Spain in Div. 3NO (1995-2002). International commercial catch-at-age data were available from 1975-2002.

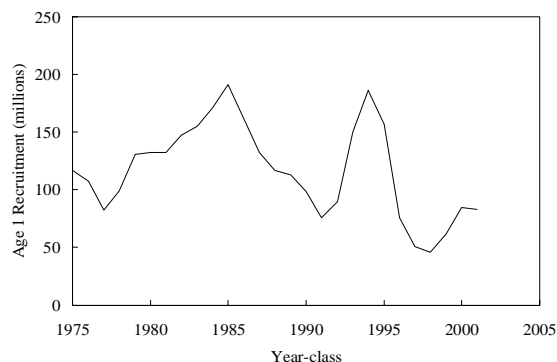
Assessment: An analytical assessment using Extended Survivors Analysis (XSA) tuned to the Canadian spring (Div. 3LNO), and fall (Div. 2J, 3K) and the EU (Div. 3M) surveys for the years 1995-2002 was used as an assessment of the 5+ exploitable biomass, level of

exploitation and recruitment to the stock. Natural mortality was assumed to be 0.20 for all ages.

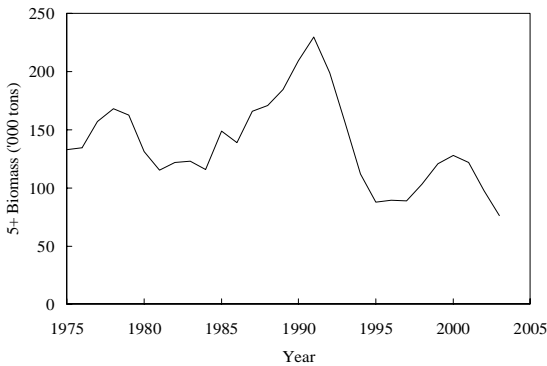
Fishing Mortality: High catches in 1991-94 resulted in F_{5-10} exceeding 0.50. F_{5-10} then dropped to about 0.20 in 1995 with the substantial reduction in catch. F_{5-10} has been increasing in recent years with increased catch. F_{5-10} in 2002 is estimated to be 0.44.



Recruitment: The above average 1993-95 year-classes have comprised most of the fishery in recent years although their overall contribution to the stock was less than previously expected. Subsequent recruitment to the fishable stock over the next few years will be comprised of below average year-classes.



Biomass: The fishable biomass (age 5+) reached a historic low in 1995-97 due to very high catches and high fishing mortality. It increased during 1998-2000 due to greatly reduced catches, much lower fishing mortality and improved recruitment. However, increasingly higher catches and fishing mortality since then accompanied by poorer recruitment has caused it to decline again.



State of the Stock: The exploitable biomass has been declining in recent years and is presently estimated to be at its lowest level. Recent recruitment has been poor and if catches continue at recent levels, then the stock will decline further.

Recommendation: The present view of the stock is considerably more pessimistic than in recent years. All observed indicators are showing persistent declines over the past several years while catches have generally been increasing. Assuming a catch of 30 000 tons in 2003 and in order to prevent a further decline in exploitable biomass during 2004, the catch in 2004 should not exceed 16 000 tons.

The Council again recommends that measures be considered to reduce, as much as possible, the exploitation of juvenile Greenland halibut in all fisheries.

Reference Points: Precautionary reference points have not been defined for this stock as yet.

Medium-term considerations: Stochastic medium-term, stock projections were generated in order to illustrate a series of potential management scenarios for rebuilding exploitable biomass. Each projection was conditioned on the assumption of a 30 000 tons catch in 2003, with constant landings or exploitation rate in each of the years 2004-2007. The results are illustrated in the following figures.

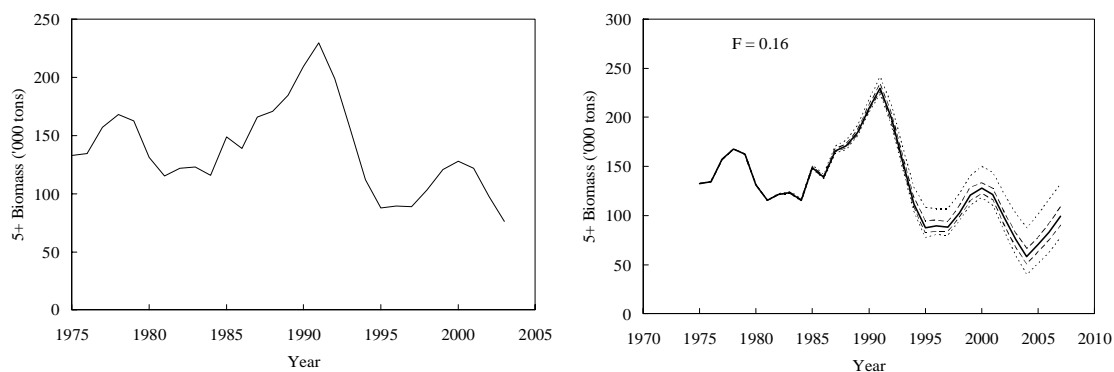
The lower fishing mortality scenarios ($F_{0.1}$, F_{max}) result in a recovery of the exploitable biomass to the previous low level (1995-97) by 2007. Exploitable biomass would remain constant with a *status quo* F (0.44) or constant landings at 20 000 tons but at a new low level. The stochastic projections indicate that there is a high probability that constant landings of 20 000 tons or 30 000 tons will result in high mortality rates that exceed those of the early-1990s.

Special Comments: The Council reiterates its concern that the catches taken from this stock consist mainly of young, immature fish of ages several years less than that at which sexual maturity is achieved.

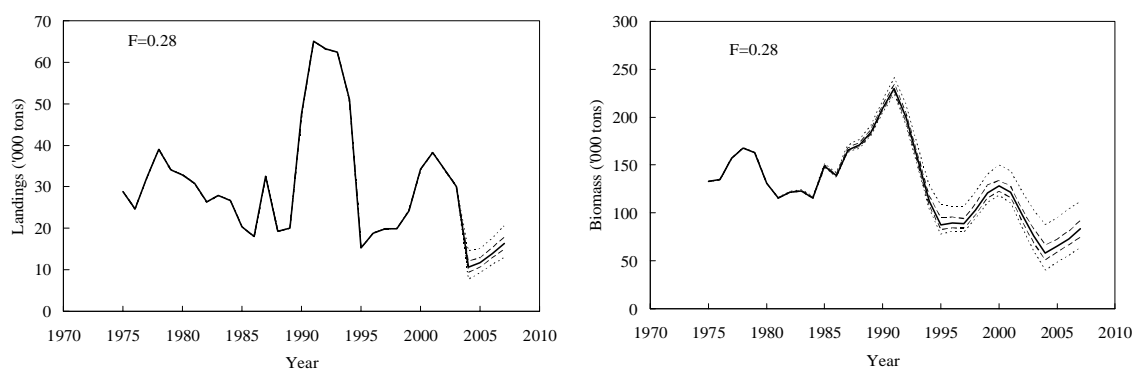
During previous assessments, Scientific Council has noted that fishing effort should be distributed in a similar fashion to biomass distribution in order to ensure sustainability of all spawning components.

It is strongly recommended that Fisheries Commission take steps to ensure that any by-catches of other species during the Greenland halibut fishery are true and unavoidable by-catches.

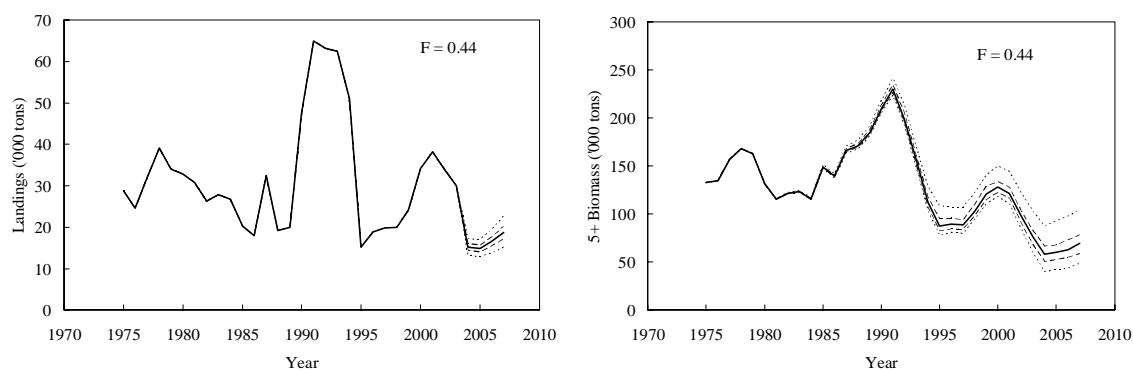
Sources of Information: SCR Doc. 03/8, 9, 24, 36, 40, 42, 51; SCS Doc. 03/6, 7, 11.



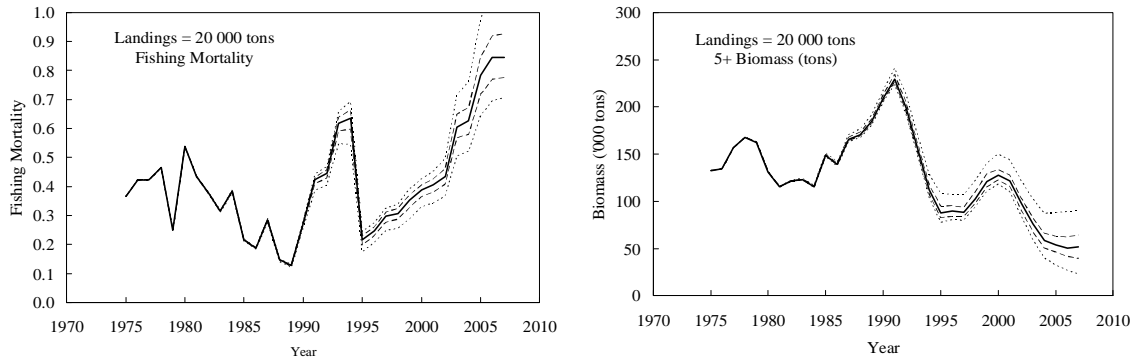
A stochastic projection for Greenland halibut in Subarea 2 and Div. 3KLMNO landings and ages 5+ exploitable biomass at a constant fishing mortality of $F = 0.16$ ($F_{0.1}$) in the years 2004-2007.



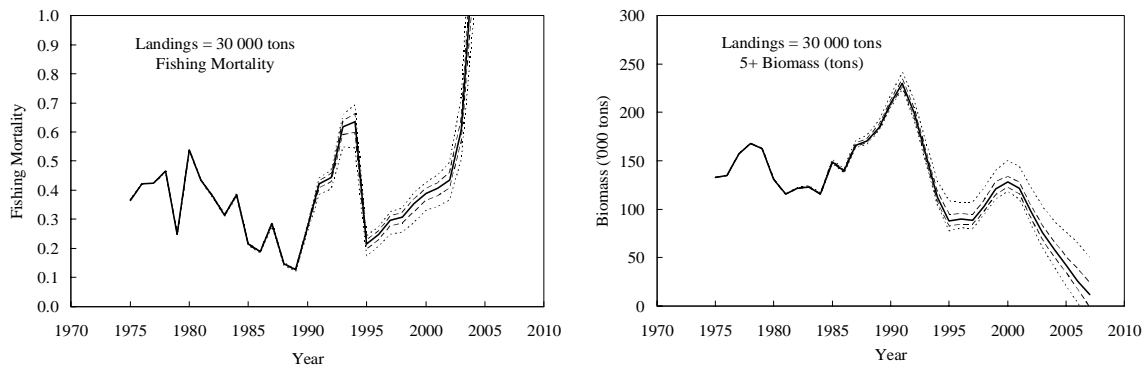
A stochastic projection for Greenland halibut in Subarea 2 and Div. 3KLMNO landings and ages 5+ exploitable biomass at a constant fishing mortality of $F = 0.28$ (F_{\max}) in the years 2004-2007.



A stochastic projection for Greenland halibut in Subarea 2 and Div. 3KLMNO landings and ages 5+ exploitable biomass at a constant fishing mortality of $F = 0.44$ ($F_{\text{status quo}}$) in the years 2004-2007.



A stochastic projection for Greenland halibut in Subarea 2 and Div. 3KLMNO fishing mortality and ages 5+ exploitable biomass at a constant catch of 20 000 tons in the years 2004-2007.



A stochastic projection for Greenland halibut in Subarea 2 and Div. 3KLMNO fishing mortality and ages 5+ exploitable biomass at a constant catch of 30 000 tons in the years 2004-2007.

b) Request for Advice on TACs and Other Management Measures for the Years 2004 and 2005

The Scientific Council at its meeting of September 2000 agreed to consider certain stocks on a multi-year rotational basis. This section presents those stocks for which the Scientific Council provided advice for the years 2004 and 2005. The next assessment of these stocks will be held in 2005.

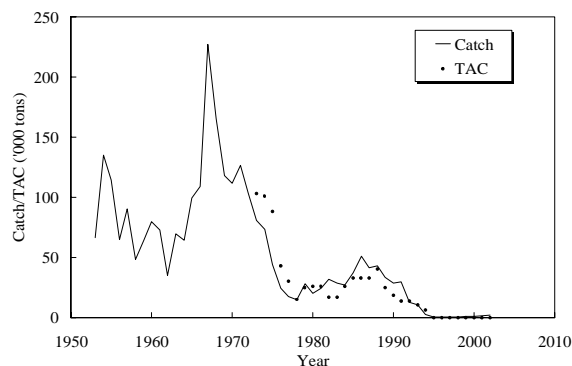
Cod (Gadus morhua) in Divisions 3N and 3O

Background: This stock occupies the southern part of the Grand Bank of Newfoundland. Cod are found over the shallower parts of the bank in summer, particularly in the Southeast Shoal area (Div. 3N) and on the slopes of the bank in winter as cooling occurs.

Fishery and Catches: There has been no directed fishery since mid-1994. Catches have increased steadily during this moratorium.

Year	Catch ('000 tons)		TAC ('000 tons)	
	STACFIS	21A	Recommended	Agreed
2000	1.1	0.5 ¹	ndf	ndf
2001	1.3	0.9 ¹	ndf	ndf
2002	2.2	1.2 ¹	ndf	ndf
2003			ndf	ndf

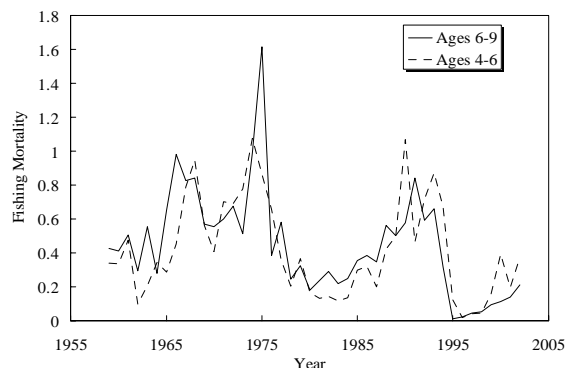
¹ Provisional
ndf No directed fishing.



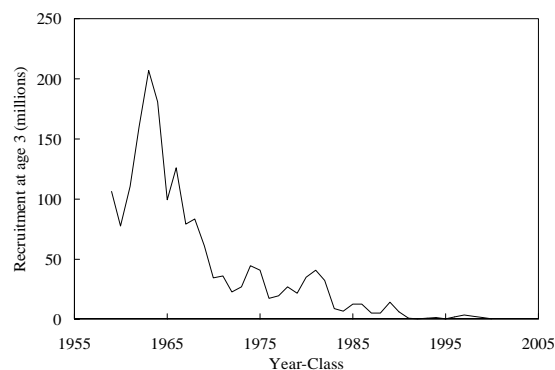
Data: Length and age composition were available from the 2001 and 2002 fisheries to estimate the total removals at age. Canadian spring and autumn survey data provided abundance, biomass and age structure information. Canadian juvenile research survey data were available up to 1994.

Assessment: An analytical assessment was presented to estimate population numbers in 2003.

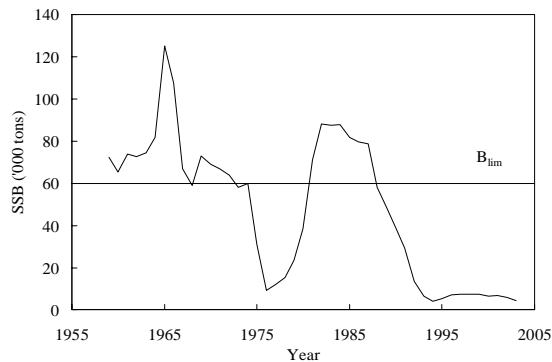
Fishing Mortality: Has increased since the moratorium, particularly on younger fish.



Recruitment: Recent surveys, model estimates of cohort strength and the VPA suggest that all recent year-classes have been at an extremely low level.



Biomass: The 2003 total biomass and spawning biomass are estimated to be at extremely low levels.

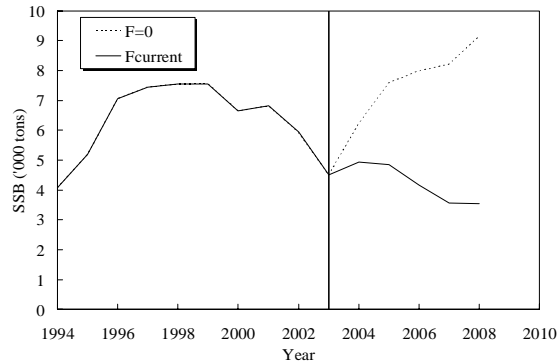
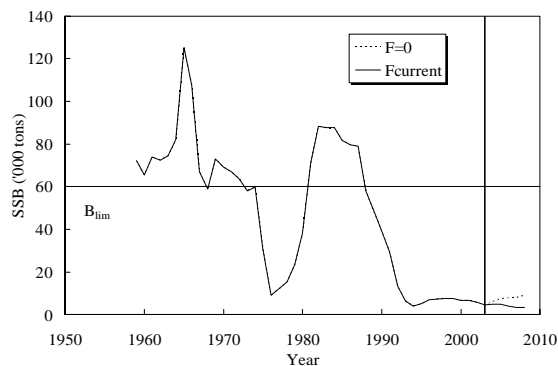


State of the Stock: The stock remains close to its historical low with weak representation from all year-classes.

Recommendation: There should be no directed fishing for cod in Div. 3N and Div. 3O in 2004 and 2005. By-catches of cod should be kept to the lowest possible level and restricted to unavoidable by-catch in fisheries directing for other species. Efforts should be made to reduce current levels of by-catch.

Reference Points: The current best estimate of B_{lim} is 60 000 tons. It was also concluded that in the recent period of low productivity, there is an indication of even further reduction in recruitment at about half the B_{lim} level. The Scientific Council **recommended** that it review in detail the biological reference points in the context of the PA framework when the SSB has reached half the current estimate of B_{lim} .

Medium-term considerations: Deterministic projections were conducted to examine stock biomass over the next five years. Projections were limited to five years as extended projections are increasingly driven by recruitment assumptions. Spawner biomass was projected assuming $F = 0$, and under recently observed fishing mortality ($F = 0.32$). Continued fishing at current levels will further deplete the stock. If there is no fishing, spawner biomass is projected to double over the next five years. In the Figure below the upper panel gives the entire time series trajectory of the SSB, and the lower panel highlights trends since 1994.



Special Comments: Scientific Council is concerned that catches of cod have increased substantially since 1995. Fishing mortality is now at levels comparable to those during periods in the past when substantial fisheries existed, even though the stock is currently under moratorium and at a very low SSB.

The next assessment will be in 2005.

Sources of Information: SCR Doc. 03/2, 14, 18, 19, 21, 26, 30, 59; SCS Doc. 03/6, 7, 10, 11, 12.

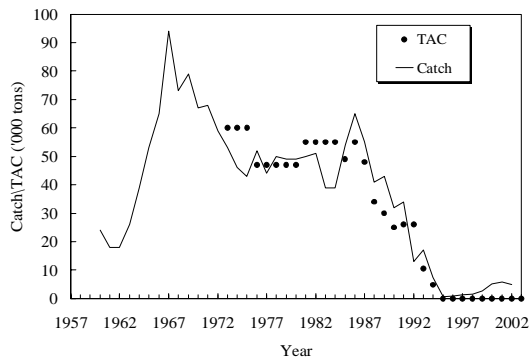
*American Plaice (*Hippoglossoides platessoides*) in Divisions 3L, 3N and 3O*

Background: Historically, American plaice in Div. 3LNO has comprised the largest flatfish fishery in the Northwest Atlantic.

Fishery and Catches: In most years the majority of the catch has been taken by offshore otter trawlers. There was no directed fishing in 1994 and there has been a moratorium from 1995 to 2003. Even under the moratorium, catches have increased substantially in recent years.

Year	Catch ('000 tons)		TAC ('000 tons)	
	STACFIS	21A	Recommended	Agreed
2000	5.2	2.7 ¹	ndf	ndf
2001	5.7	2.8 ¹	ndf	ndf
2002	4.8	3.1 ¹	ndf	ndf
2003			ndf	ndf

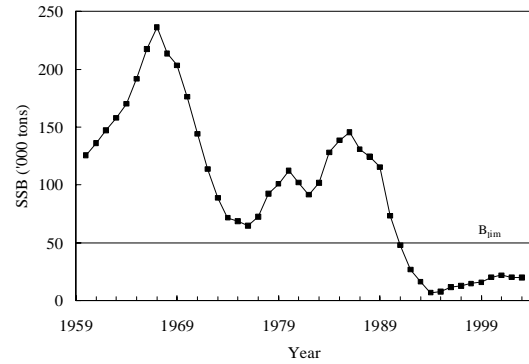
¹ Provisional
ndf No directed fishing.



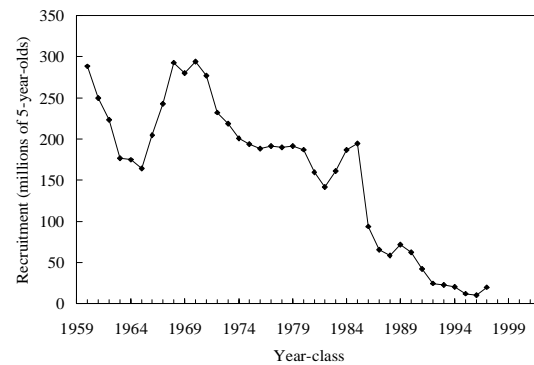
Data: Biomass and abundance data were available from several surveys. Age sampling data from Canadian by-catch as well as length sampling from by-catch from Russia, EU-Spain and EU-Portugal were available.

Assessment: An analytical assessment using the ADAPTive framework tuned to the Canadian spring and autumn surveys was used. Natural mortality was assumed to be 0.2 for all ages, except from 1989 to 1996 it was assumed to be 0.53.

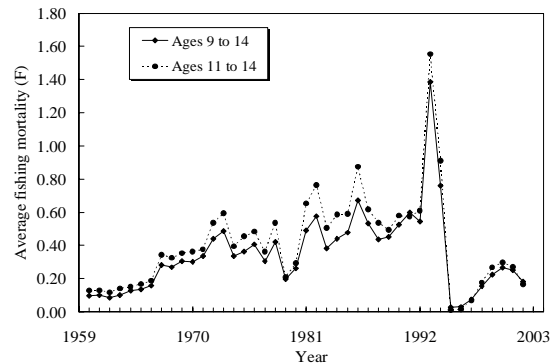
Biomass: Biomass and SSB are very low compared to historic levels. SSB declined to the lowest observed level in 1994 and 1995. It has increased since then, but still remains very low at just over 20 000 tons.



Recruitment: There has been no good recruitment to the exploitable biomass since the mid-1980s.



Fishing mortality: The average fishing mortality on ages 9 to 14 was above 0.2 from 1999-2001 and decreased to 0.18 in 2002.



State of the Stock: The stock remains low compared to historic levels.

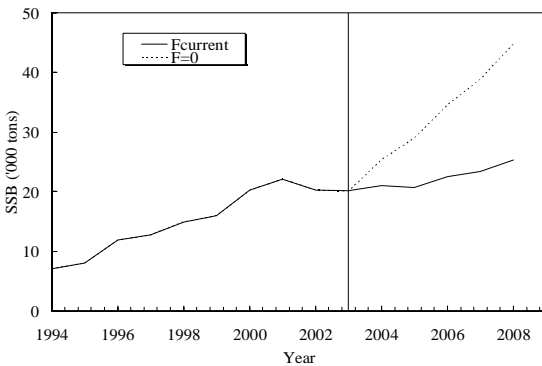
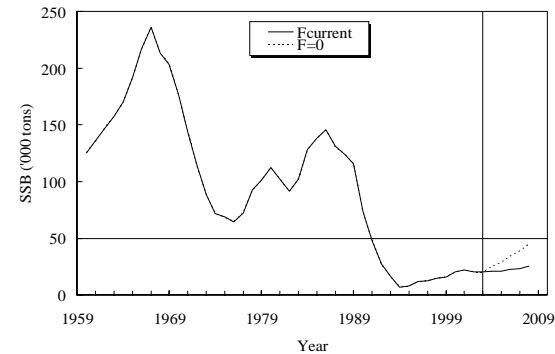
Recommendation: There should be no directed fishing on American plaice in Div. 3LNO in 2004 and 2005. By-catches of American plaice should be kept to the lowest possible level and restricted to unavoidable by-catch in fisheries directing for other species. Efforts should be made to reduce current levels of by-catch.

Reference Points: Good recruitment has not occurred in this stock when SSB has been below 50 000 tons and this is currently the best estimate of B_{lim} .

Medium-term considerations: Deterministic projections were conducted to examine stock biomass over the next 5 years. Projections were limited to 5 years as extended projections are increasingly driven by recruitment assumptions. Spawner biomass was projected assuming $F = 0$ and under recently observed fishing mortality ($F = 0.26$).

The first graph below shows the period of the projection along with the historic trajectory of SSB. The lower panel shows only from 1994 on.

The increase in SSB is projected to be five times greater at $F=0$ than at current F . In neither case does SSB reach the B_{lim} of 50 000 tons by 2008.



Witch Flounder (*Glyptocephalus cynoglossus*) in Divisions 2J, 3K and 3L

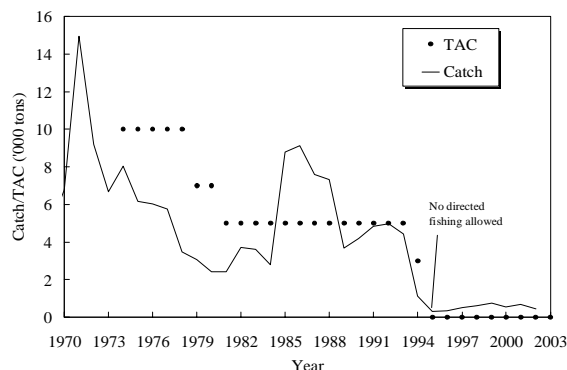
Background: Historically, the stock occurred mainly in Div. 3K although recently the proportion of the stock in Div. 3L is greater. In the past, the stock had been fished mainly in winter and spring on spawning concentrations but is now only a by-catch of other fisheries.

Fishery and Catches: The catches during 1995-99 ranged between 300-1 400 tons including unreported catches. The 2002 catch was about 450 tons.

Year	Catch ('000 tons)		TAC ('000 tons)	
	STACFIS	21A	Recommended	Agreed
2000	0.7	0.5 ¹	ndf	ndf
2001	0.8	0.6 ¹	ndf	ndf
2002	0.4	0.7 ¹	ndf	ndf
2003			ndf	ndf

¹ Provisional and includes estimates from Div. 3M from 1998 onwards.

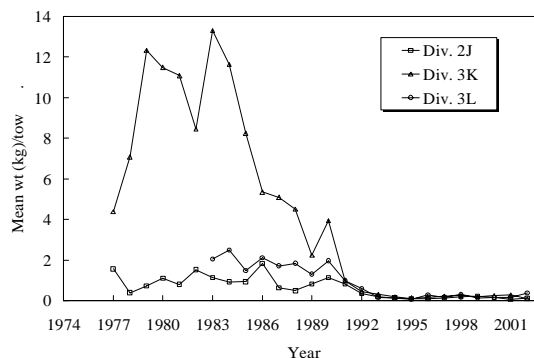
ndf No directed fishing.



Data: Abundance and biomass data, as well as mean numbers and weights (kg) per tow, were available from Canadian autumn surveys during 1978-2002. Age based data have not been available since 1993 and none are anticipated in the near future.

Assessment: No analytical assessment was possible.

Biomass: Survey mean weights (kg) per tow showed a rapid downward trend since the mid-1980s and since 1995 have remained at an extremely low level.



Recruitment: No information was available to this meeting.

State of the Stock: Stock remains at a very low level.

Recommendation: No directed fishing on witch flounder in the years 2004 and 2005 in Div. 2J, 3K and 3L to allow for stock rebuilding. By-catches of witch flounder in fisheries targeting other species should be kept at the lowest possible level.

Reference Points: Scientific Council is not in a position to propose reference points at this time.

Special Comments: The next assessment will be in 2005.

Sources of Information: SCR Doc. 03/47; SCS Doc. 03/6, 7, 11.

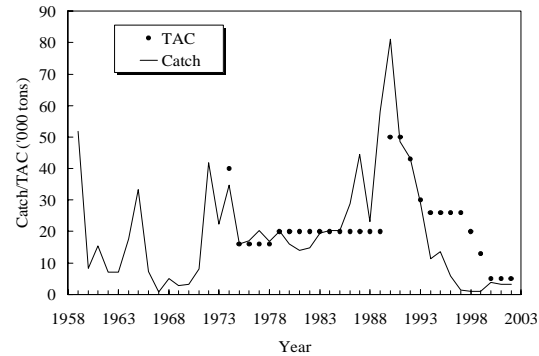
Redfish (*Sebastes spp.*) in Division 3M

Background: There are 3 species of redfish, which are commercially fished on Flemish Cap: deep-water redfish (*Sebastes mentella*), golden redfish (*Sebastes marinus*) and Acadian redfish (*Sebastes fasciatus*). The present assessment evaluates the status of the Div. 3M beaked redfish stock, regarded as a management unit composed of two populations from two very similar species (*Sebastes mentella* and *Sebastes fasciatus*). The reason for this approach is that evidence indicates this is by far the dominant redfish group on Flemish Cap.

Fishery and Catches: The redfish fishery in Div. 3M increased from 20 000 tons in 1985 to 81 000 tons in 1990, falling continuously since then until 1998-99, when a minimum catch around 1 100 tons was recorded mostly as by-catch of the Greenland halibut fishery. This decline was related with the simultaneous quick decline of the stock biomass and fishing effort. There was an overall increase of the redfish catches to 3 800 tons in 2000. In 2001-02 provisional catch is somewhat lower at around 3 000 tons with the directed fishery primarily prosecuted by EU (Portugal) and Russia. The start in 1993 and further development of a shrimp fishery on Flemish Cap led to high levels of redfish by-catch in 1993-1994. Since 1995 this by-catch in weight fell to apparent low levels but in 2001-02 redfish by-catch was at 750 tons, the highest level observed since 1994. Translated to numbers this represents an increase from the recent by-catch level of 3.4 million redfish (1999-2000) to 22.1 millions in 2001-02, representing 71% of the total 2001-02 catch in numbers.

Year	Catch ('000 tons)		TAC ('000 tons)	
	STACFIS	21A	Recommended	Agreed
2000	3.7	3.8 ¹	3-5	5
2001	3.2	3.2 ¹	3-5	3-5
2002	2.9	3.0 ¹	3-5	3-5
2003			3-5	3-5

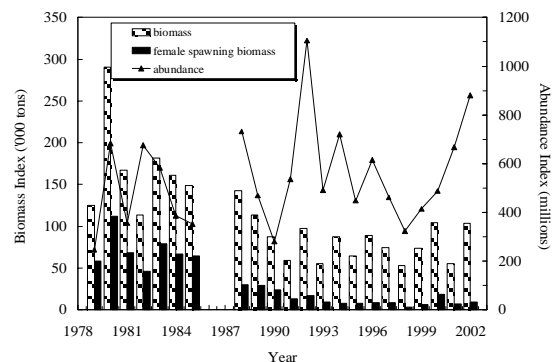
¹ Provisional



Data: Catch-at-age data were available from 1989-2002 including by-catch information from the shrimp fishery. Catch-rate data for 1959-93 were available from the NAFO database.

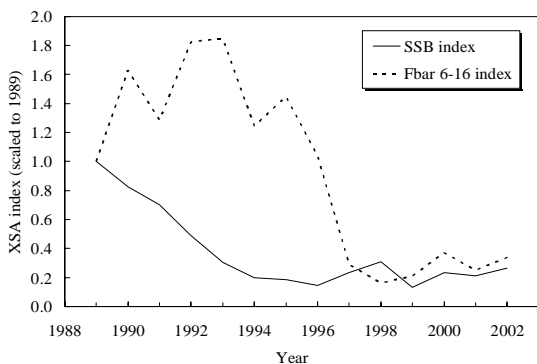
There are three survey series providing bottom biomass indices as well as length and age data for the Flemish Cap redfish stocks; Russia (1983-93, 1995-96 and 2001-02), EU (1988-2002) and Canada (1979-85 and 1996). The Russian survey was complemented with an acoustic estimate of the redfish pelagic component for the 1988-92 period.

Assessment: Survey bottom biomass and female spawning biomass were calculated from 1979-85 Canadian and 1988-2002 EU surveys.

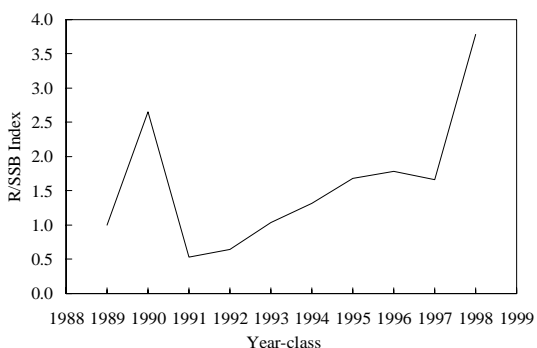


A virtual population analysis (XSA) and a surplus production analysis (ASPIC) were carried out for 1989-2002, providing indicators of stock biomass, female spawning biomass and fishing mortality trends.

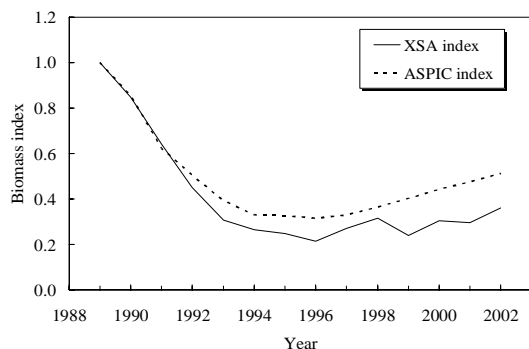
Fishing Mortality: Fishing mortality was at very high levels until 1995 and then dropped to relatively very low levels since 1997.



Recruitment: The recruits per SSB have increased through the 1990s, compensating for the SSB decline. Based on XSA, the 1998 year-class is relatively abundant.



Biomass: The Div. 3M beaked redfish stock experienced a steep decline from the second half of the 1980s until 1996. Since 1997 fishing mortality was relatively low, allowing the survival and growth of the population. Despite recent fluctuations, biomass and female spawning biomass appear to have increased marginally since 1997 but are still well below the SSB that produced the 1990 year-class.



State of the Stock: Scientific Council concluded that while the decline in stock biomass appears to have halted, it is still unclear as to whether there has been any actual increase. The total stock and spawning stock are currently at a low level compared to the earlier period in the time series. At the low fishing mortalities of the most recent years, with growth of the relatively strong 1990 year-class followed by the promising 1998 year-class, spawning biomass should gradually increase.

Recommendation: Scientific Council was unable to advise on a specific TAC for 2004 and 2005. However, in order to maintain relatively low fishing mortalities so as to promote stock recovery, Scientific Council recommends that catch for Div. 3M redfish in year 2004 and 2005 be in the range of 3 000-5 000 tons.

Reference Points: No updated information on biological reference points was available.

Special Comments: At present, stock growth in biomass and in abundance is dependent upon the appearance and survival of cohorts past their early life stage so that they recruit to the SSB and commercial fishery. Scientific Council is extremely concerned about sharp increases of by-catch of small redfish taken in the shrimp fishery in 2001-2002 (750 tons). Scientific Council considers that it is important to keep the by-catch of this very small redfish to a minimum.

The next assessment will be in 2005.

Sources of Information: SCR Doc. 03/9, 25, 42, 45; SCS Doc. 03/06 (Part 2), 7, 11.

Redfish (*Sebastes spp.*) in Divisions 3L and 3N

Background: There are two species of redfish, *Sebastes mentella* and *Sebastes fasciatus*, which occur in Div. 3LN and are managed together. These are very similar in appearance and are reported collectively as redfish in statistics. The relationship to adjacent NAFO Divisions, in particular to Div. 3O, is unclear and further investigations are necessary to clarify the integrity of the Div. 3LN management unit.

Fishery and Catches: The average reported catch of redfish in Div. 3LN from 1959 to 1985 was about 22 000 tons, ranging between 10 000 tons and 45 000 tons. Catches increased sharply from about 21 000 tons in 1985, peaked at an historical high of 79 000 tons in 1987 then declined steadily to about 600 tons in 1996. Catch increased to 850 tons in 1998, the first year under a moratorium on directed fishing, with a further increase to 2 300 tons in 1999 and a declined to 1 200 tons in 2002. Catches since 1998 were taken as by-catch primarily in Greenland halibut fisheries by EU-Portugal, EU-Spain and Russia. A portion of the catches, in some years substantial, have been taken by non-Contracting Parties from 1987 to 1994. These countries have not fished in Div. 3LN since 1994.

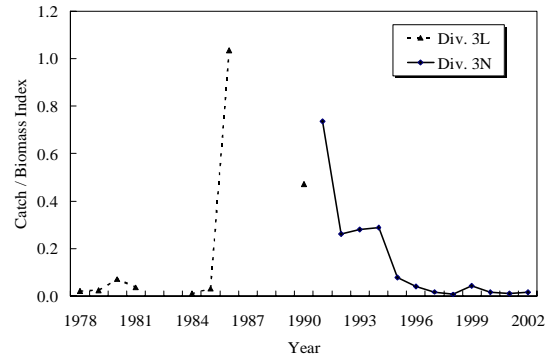
	Catch ('000 tons)		TAC ('000 tons)	
	STACFIS	21A	Recommended	Agreed
2000	1.7	1.5 ¹	ndf	0
2001	1.4	0.9 ¹	ndf	0
2002	1.2	1 ¹	ndf	0
2003			ndf	0

¹ Provisional
ndf No directed fishing

Data: Bottom trawl surveys conducted by USSR/Russia from 1984 to 1994, and by Canada from 1978 to 2002 are the basis for the assessment of stock status.

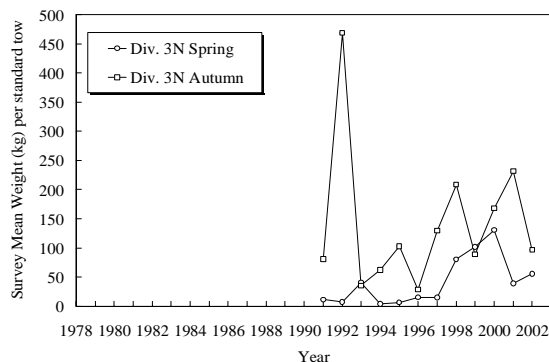
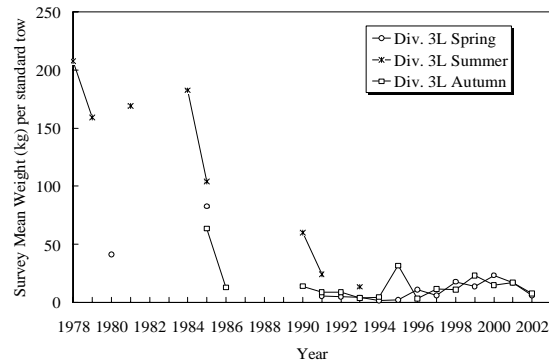
Assessment: No analytical assessment was possible.

Fishing Mortality: Reduced from relatively high levels in 1991-1992 and has been relatively low since 1995 in both Div. 3L and Div. 3N.



Recruitment: No sign of good recruitment since the 1986 and 1987 year-classes.

Biomass: Estimates from recent surveys are considerably lower than those from the 1980s indicating a reduced and low stock size in Div. 3L.



State of the Stock: Based on the available data, the stock appears to be at a very low level. There are indications of some increases in the stock since 1996 due to growth in weight of the relatively strong 1986-87 year-classes and possibly through some immigration of fish from Div. 3O to Div. 3N.

Recommendation: No directed fishing for redfish in Div. 3LN in years 2004 and 2005, and by-catches of redfish in fisheries targeting other species should be kept at the lowest possible level.

Reference Points: Scientific Council is not in a position to propose reference points at this time.

Special Comments: The most recent relatively good year-classes, those of 1986-87, are recruiting to the SSB. These same year-classes will make up the greatest proportion of the SSB until at least 2010.

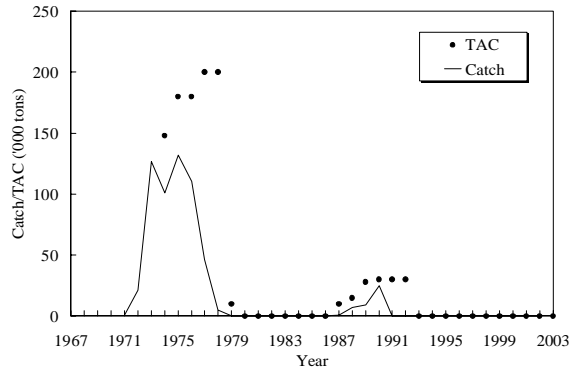
The continuing uncertainties regarding the relationship between redfish in Div. 3LN and Div. 3O have important impacts on interpretation of available data.

The next assessment will be in 2005.

Sources of Information: SCR Doc. 03/55, 60; SCS Doc. 01/6, 7, 11.

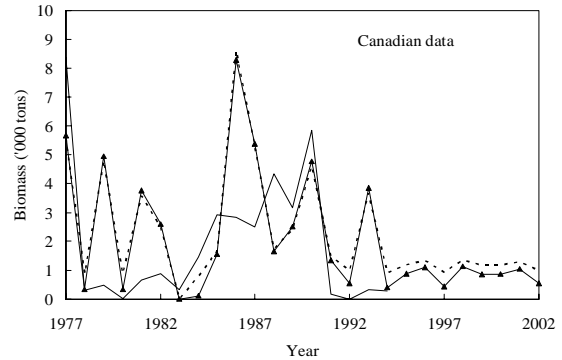
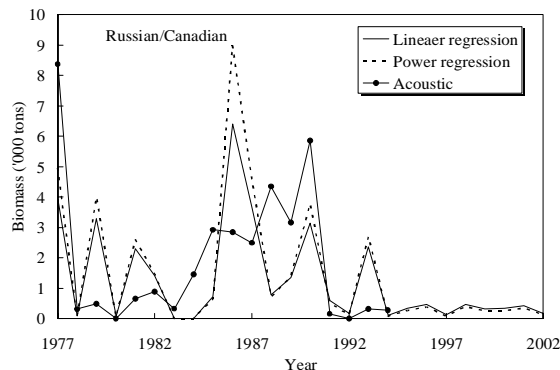
Capelin (Mallotus villosus) in Divisions 3N and 3O

Fishery and catches: There has not been a directed fishery since 1993 when a moratorium was established, and no commercial catches have been reported since then.



Data: Capelin catches from Canadian bottom trawl surveys conducted in 1977-2002, as well as historical data sets from Russian and Canadian trawl acoustic surveys directed to capelin.

Assessment: The only indicator of stock dynamics presently available may be capelin biomass indices obtained during Canadian stratified-random bottom trawl surveys. Trawlable biomass of capelin in Div. 3LNO and 3NO for 1977-2002 was converted into absolute values on the basis of the relationship between trawl and acoustic estimates of capelin stock in Div. 3LNO in spring 1977-1994. Assuming the existence of a correlation between biomass estimates derived by the acoustic and the trawl methods, it was concluded that in 1990-1994, both the calculated and the trawlable biomass of capelin in Div. 3LNO fluctuated within a wide range. Since 1995, capelin biomass has remained at a low level compare to late-1980s.



Recommendation: Scientific Council recommends no directed fishery on capelin in Div. 3NO in 2004-2005.

Reference points: Scientific Council is not in a position to propose reference points at this time.

Special Comments: Scientific Council noted that NAFO recognizes the role that capelin play in the Northwest Atlantic ecosystem as a very important prey species for fish, marine mammals and seabirds.

Historically, the spawning biomass was determined through the use of hydroacoustics.

It is not clear how precise the capelin indices from the bottom trawl surveys reflect the real stock distribution and stock status.

The next assessment will be in 2005.

Sources of Information: SCR Doc. 03/37.

c) **Special Requests for Management Advice** (see Annex 1 Items 3-9)i) **Redfish in Division 30** (see Item 3)

The Fisheries Commission with the concurrence of the Coastal State requested the Scientific Council, at a meeting in advance of the 2003 Annual Meeting to: *provide advice on the scientific basis for the management of redfish in Div. 30 including recommendations regarding the most appropriate TAC for 2004 and 2005. This stock will be assessed in alternate years thereafter.*

Redfish (*Sebastes spp.*) in Division 30

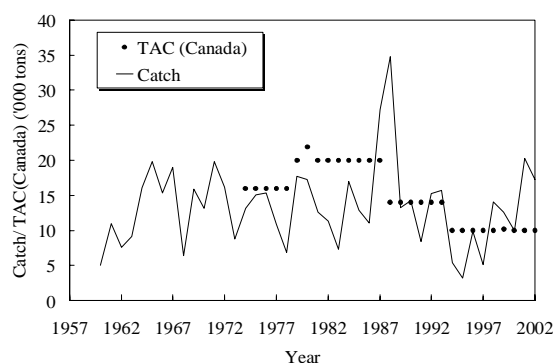
Background: There are two species of redfish, *Sebastes mentella* and *Sebastes fasciatus*, which occur in Div. 30. These are very similar in appearance and are reported collectively as redfish in statistics. The relationship to adjacent NAFO Divisions, in particular to Div. 3LN, is unclear and further investigations are necessary to clarify the relationship between redfish in Div. 30 and Div. 3LN.

Fishery and Catches: Catches have ranged between 3 000 tons and 35 000 tons since 1960. Up to 1986 catches averaged 13 000 tons, increased to 27 000 tons in 1987 with a further increase to 35 000 tons in 1988. Catches declined to about 16 000 tons in 1993 and declined further to about 3 000 tons in 1995, partly due to reductions in non-Canadian allocations within the Canadian zone since 1993. Catches increased to 14 000 tons by 1998, declined to 10 000 tons in 2000 and increased to 20 000 in 2001. The 2002 catch was at 17 000 tons.

Russia predominated in this fishery up until 1993 but ceased directed fishing in 1994 because of reductions in non-Canadian allocations within the Canadian zone. Russia resumed directed fishing in the NRA in 2000 rapidly increasing their catch from 2 200 tons to about 11 000 tons in 2001 and 2002. EU-Portugal began fishing in 1992 and averaged about 1 800 tons between 1992 to 1998. Catches escalated to 5 500 tons in 1999 and have averaged about 4 200 tons to 2002. EU-Spain, who had taken less than 50 tons before 1995, increased catches from 1 200 tons in 1997 to a peak of 4 500 tons in 1999 with a subsequent decline to 700 tons in 2002. Between 1996 and 2002 Canadian catches have fluctuated between levels of about 9 000 tons and 2 500 tons.

Year	Catch ('000 tons)	
	STACFIS	21A
2000	10	13 ¹
2001	20	22 ¹
2002	17	19 ¹
2003		

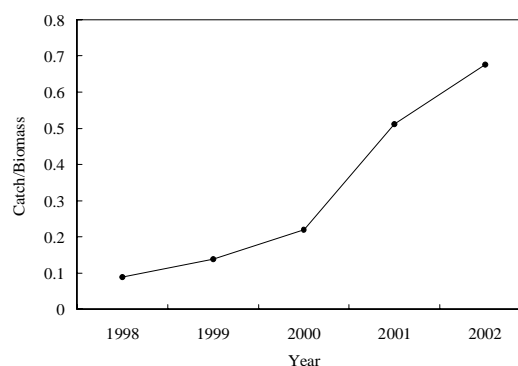
¹ Provisional



Data: Data from bottom trawl surveys conducted by USSR/Russia from 1983 to 1993, and by Canada from 1991 to 2002 are the basis for the assessment of stock status.

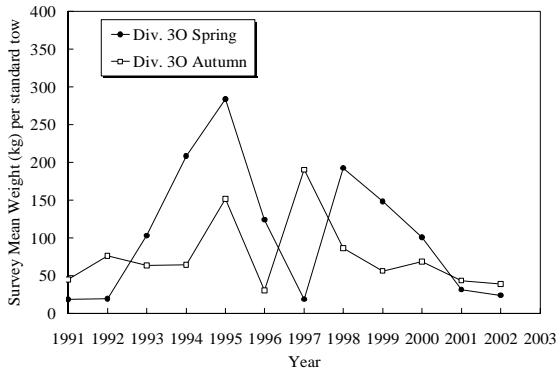
Assessment: No analytical assessment was possible.

Fishing Mortality: Likely increased in 2001 and 2002.



Recruitment: No sign of good recruitment since the 1988 year-class.

Biomass: There has been no increase in survey biomass indices the last few years.



State of the Stock: Surveys indicate no overall trend in stock size in the last decade.

Recommendation: Scientific Council is unable to advise on a specific TAC for 2004 and 2005. The Scientific Council noted there is insufficient information on which to base predictions of annual yield potential for this resource. Stock dynamics and recruitment patterns are also poorly understood. Catches have averaged about 13 000 tons since 1960 and over the long term, catches at this level do not appear to have been detrimental.

Reference Points: Scientific Council is not in a position to propose reference points at this time.

Special Comments: Given that the bulk of the catches in recent years are comprised of fish less than 25cm, these fisheries are targeting predominantly immature fish.

The continuing uncertainties regarding the relationship between redfish in Div. 3LN and Div. 3O have important impacts on interpretation of available data.

The next assessment will be in 2005.

Sources of Information: SCR Doc. 03/12, 26, 60, 63; SCS Doc. 03/6, 7, 11.

ii) Formulation of advice under the Precautionary Approach (Items 5 and 6)

The Fisheries Commission noting the progress made by the Scientific Council on the development of a framework for the implementation of the Precautionary Approach requested the Scientific Council, at a meeting in advance of the 2003 Annual Meeting to: *provide certain information on, and to take into account some elements, when considering the Precautionary Approach (see Annex 1 Item 5 and 6 for details).*

The Council addressed this topic under the Agenda Item on the Implementation of Precautionary Approach, as reported below under Section XII Item 1a) and b).

iii) Pelagic *S. mentella* (redfish) in Subareas 1-3 and adjacent ICES area (Item 8)

Scientific Council was requested by the Fisheries Commission to: *review the most recent information on the distribution of this resource, as well as on the affinity of this stock to the pelagic redfish resource found in the ICES Sub-area XII, parts of SA Va and XIV and to the shelf stocks of redfish found in ICES Sub-areas V, VI and XIV, and NAFO Subareas 1-3 (Annex 1 Item 8).*

The Council responded as follows:

Scientific Council was provided a report on the deliberations of the ICES North-Western Working Group (NWWG) meeting that took place from 29 April to 8 May 2003.

Scientific Council noted that there was no trawl-acoustic survey carried out in 2002. The NWWG reported that the fishery for oceanic *S. mentella* in ICES Subareas Va, XII, and XIV and in NAFO Div. 1F, 2H and 2J has shown a persistent seasonal pattern in terms of geographical and depth distribution for the past five years. The main fishing occurs in the second and third quarters of the year. In the second quarter, the fishery takes place in the area east of 32°W and north of 61°N at depths deeper than 500 m. In the third quarter, the fleet moves towards the southwest to ICES Subarea XII and NAFO Convention Area and the depth of the hauls are in waters shallower than 500 m. There has traditionally been very little fishing activity from November until late March, and in 2002 no activity was reported during that time. The size of the fish caught in the southwest areas in the third quarter of the year is smaller than the fish caught in the northwest area in the second quarter. Based on the distribution of the fishery information it was concluded that the fishing pattern in 2002 was similar as it was in the past five years.

Scientific Council noted that the NWWG concluded that there are still uncertainties in the stock structure of *S. mentella* in ICES Sub-areas V, XII and XIV and NAFO Convention Area. However, all information suggests that the fishery in the NAFO Convention Area is on the same stock as fished in western part of ICES Sub-area XII. The Scientific Council agreed with this evaluation. Scientific Council noted there was new information presented to the NWWG regarding results of different methods that were used to investigate the issue of stock structure. The NWWG considered that as its primary functions as an assessment working group, it did not have sufficient expertise to thoroughly review the scientific research on redfish stock identification. The NWWG recommended that a separate group be formed with the appropriate expertise that would review existing and future scientific material.

Scientific Council noted that the issue of possible relationships between pelagic *S. mentella* and demersal *S. mentella* in the NAFO area has not been considered by the NWWG.

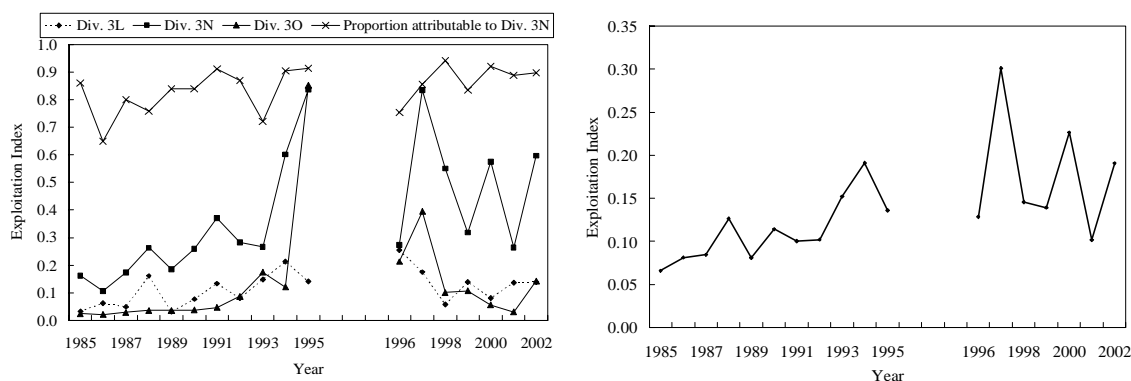
iv) Information on thorny skates in Div. 3LNO (Item 9)

The Fisheries Commission with the concurrence of the Coastal State requested Scientific Council, at a meeting in advance of the 2003 Annual Meeting, to provide the following with respect to thorny skate in Div. 3LNO.

Scientific Council responded to each request as follows (review documents: SCR Docs. 03/57, 39, 02/011, 118, 121, 01/78; SCS Docs. 03/6, 7 and 11):

- a) *Information on exploitation rates in recent years, as well as information on by-catches of other groundfish in the 3LNO skate fishery.*

Catches used for the index of exploitation (commercial catch/spring survey biomass index) were derived from Zonal Interchange Format (ZIF) for Canada and STATLANT21A and Canadian surveillance estimates for other countries. The index of exploitation or relative F for thorny skate increased from 0.07 in the mid-1980s fluctuating around 0.18 in 1996-2002. The increasing index is concurrent with the period of stock decline. The index varied among areas; highest was in Div. 3N corresponding to the majority of the skate fishery in the NRA. The Div. 3N index increased from about 0.2 in the early-1980s, fluctuating around 0.5 after 1995. About 80% of the commercial catch was from Div. 3N in the 1980s, increasing to about 90% in the 1990s. The following graphs show the index of exploitation in each Division and the proportion attributable to Div. 3N (left panel) and the index over all areas (right panel).



By-catch reported by EU-Spain in the Div. 3NO skate fishery diminished with time. By-catch consisted mainly of American plaice, yellowtail flounder and cod (see Table below). Considerably higher by-catch rates were reported by EU-Portugal, totaling about 79% for all species combined in a Div. 3NO fishery. Dominant by-catch species (proportions not specified for the entire year) were Greenland halibut, American plaice and white hake although in certain months, American plaice and cod were each reported to exceed 20%. Reported by-catch in the Russian directed fishery in Div. 3NO amounted to 12%, mainly yellowtail flounder (5%), American plaice (4%) and cod (3%). By-catch in the Canadian fishery, further to the west in Div. 3O was 16%, comprising mainly monkfish and Atlantic halibut with very little cod and plaice and no yellowtail flounder.

Reported by-catch in fishery by country and year.

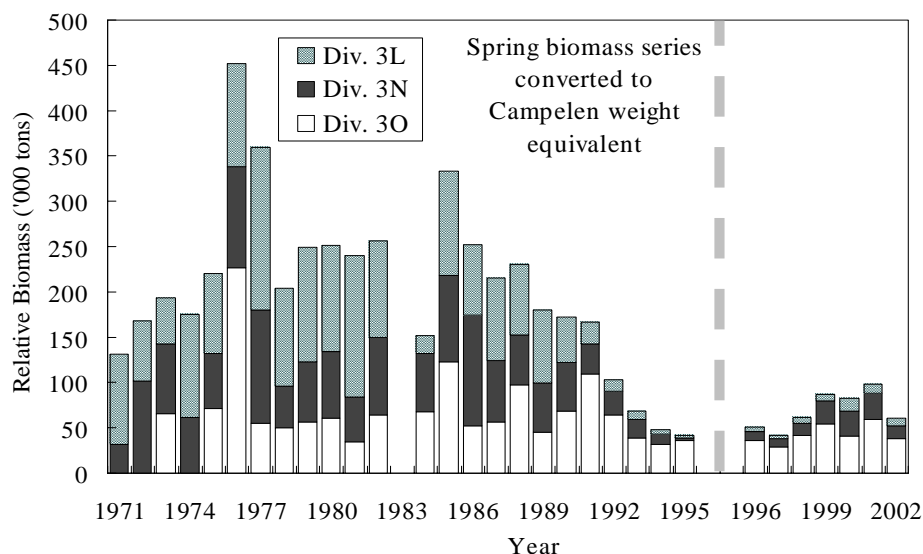
Country	Area	Year	Percent by-catch of			
			All species	Yellowtail	Am. Plaice	Atl. Cod
Canada	3O	2002	16.0	0.0	1.0	0.3
Portugal	3NO	2002	79.0			
Spain	3NO	1998	22.5	6.7	14.1	0.6
		2000	18.5	5.7	11.9	0.6
		2001	21.0	6.0	13.8	0.7
		2002	8.8	1.5	5.4	0.7
		2000			3.1	
Russia	3NO	2002	12.0	5.0	4.0	3.0

The above statistics are summarized reported values. The areas of required research (see section g below) indicate the need to collect and analyze commercial set-by-set geo-referenced data in order to adequately address the second part of this request.

- b) *Information on abundance indices and the distribution of the stock in relation to groundfish resources, particularly for the stocks which are under moratorium.*

The spring relative abundance of thorny skate in Div. 3LNO mirrored biomass trends (see Fig. below). The indices increased between the early-1970s and the mid-1980s then declined rapidly between 1985 and 1994.

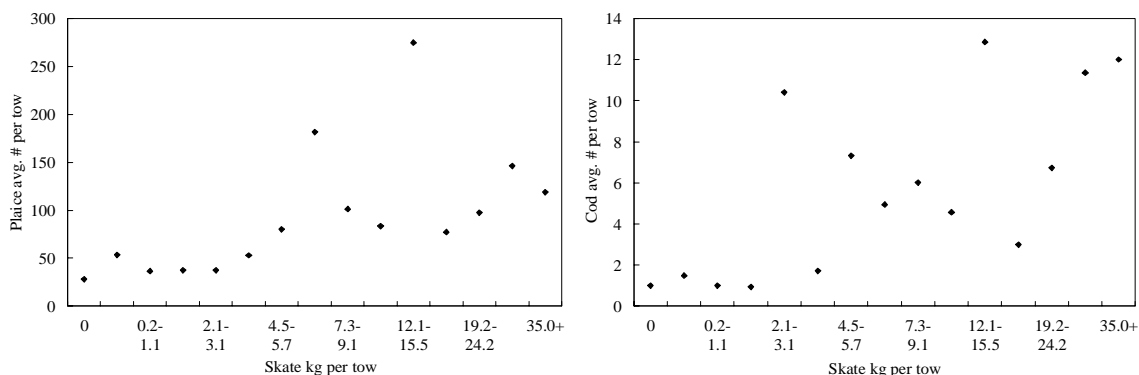
Relative biomass based on Canadian spring research surveys. There was no survey in 1983:



Most of the decline occurred on the northern part of the Grand Bank in Div. 3L and northern Div. 3O. Biomass has remained low since 1994 and the trend has remained relatively flat.

Based on 2001-2002 autumn survey data in Div. 3LNO, corresponding to the season of the directed fishery, areas of high abundance of American plaice and cod corresponded to mid- and high-range abundance of thorny skate (see following figure).

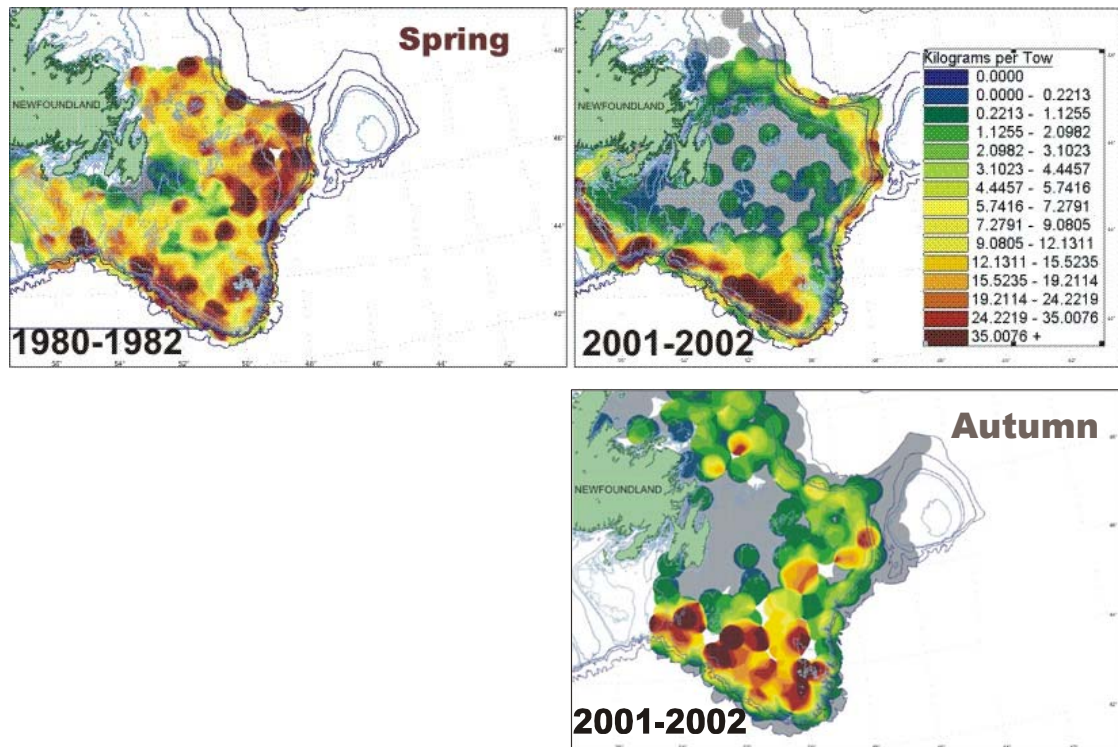
Spatial relationship between the abundance of thorny skate in relation to the abundance of American plaice and cod based on 2001-2002 autumn survey data.



- c) *Information on the distribution of thorny skate in Divisions 3LNO, as well as a description of the relative distribution inside and outside the NAFO Regulatory Area (NRA).*

Thorny skate on the Grand Bank undergo a seasonal migration, concentrating toward the bank edge from December to June and onto the bank in the other months. Also, the distribution of thorny skate on the Grand Bank has undergone significant changes over time. In the early-1980s, they were widely distributed over the entire Grand Banks in moderate to high concentrations (see distribution maps below). In the recent period (2000-2001), corresponding to where bottom temperatures are the coldest, much of the northern Grand Bank had no thorny skate.

Distribution in 1980-82 compared to 2000-2001 based on Canadian spring surveys. Grey indicates areas where no skate were caught. Brown represents highest catch rates.



The remaining biomass has become increasingly concentrated (hyper-aggregated) on the southwestern part of the Grand Bank. Although the biomass has been stable since the mid-1990s, the distribution has continued to hyper-aggregate. Areas fished correspond to where the skate are aggregating and thus commercial catch rates have remained high during the period of decline.

Based on spring and autumn Canadian survey data from Div. 3LNO in 1995-2002, 26.4% and 22.5% of the biomass of thorny skate was found in the NRA in autumn and spring respectively, mainly in Div. 3N.

Percent of biomass inside and outside of 200 miles is shown in table below. Coverage was incomplete for the spring of 1995. Data were not available for autumn 2002:

	Autumn Percent		Spring Percent	
	OUTSIDE	INSIDE	OUTSIDE	INSIDE
1995	28.0%	72.0%		
1996	26.2%	73.8%	14.0%	86.0%
1997	23.2%	76.8%	14.5%	85.5%
1998	25.3%	74.7%	19.9%	80.1%
1999	20.1%	79.9%	20.4%	79.6%
2000	35.5%	64.5%	28.1%	71.9%
2001	24.5%	75.5%	31.8%	68.2%
2002			30.5%	69.5%
AVERAGE	26.4%	73.6%	22.5%	77.5%

- d) *Advice on reference points and conservation measures that would allow for exploitation of this resource in a precautionary manner.*

Although reference points are not available for thorny skate, their life history characteristics suggest that a conservative approach to their management is appropriate. Thorny skate has late sexual maturation, low fecundity and long reproductive cycles. These characteristics result in low intrinsic rates of increase and are thought to have very low resilience to fishing mortality. Although elasmobranchs are not as fecund as most teleosts, it does not immediately follow that they have lower reproductive capacity because newly hatched skate have a much higher survival probability. Abundance of thorny skate on the Grand Banks is at its lowest historic level. Thus, even if environmental conditions were favorable and fishing pressure was low, recovery would be a much longer process than for more fecund species.

- e) *Information on annual yield potential for this stock in the context of (d) above.*

There is insufficient information at this time on which to base predictions of annual yield potentials.

- f) *Identification and delineation of fishery areas and exclusion zones where fishing would not be permitted, with the aim of reducing the impact on the groundfish stocks which are under moratoria, particularly juveniles.*

Cod and American plaice juvenile distributions are associated with the Southeast Shoal and area to the west but are variable with some degree of overlap with the thorny skate fishing grounds. An area closed to fishing intended to protect juvenile cod would constitute a significant portion of the northern extent of the thorny skate fishing grounds while one intended to protect American plaice would overlap with the southern portion of the grounds. If data from fisheries can verify that there is low capture of juveniles, exclusion zone(s) would not necessarily be beneficial.

- g) *Determination of the appropriate level of research that would be required to monitor the status of this resource on an ongoing basis with the aim of providing catch options that could be used in the context of management by Total Allowable Catch (TAC).*

The following areas of research would be required to facilitate monitoring the status of thorny skate and providing management advice:

- Recent work on maturity has permitted the examination of life stage dis-aggregated trends such as SSB/recruitment relationships. Derivation of exploitation indices series

for various life stage components, particularly the SSB, can provide some of the input required to derive reference points and conservation limits.

- Age based analyses of the population would yield more options in terms of providing management advice for the stock. Thorny skates have not previously been aged but thorns and vertebrae may provide the best materials for aging.
- Spatial dynamics of various population components should be examined in relation to environmental and fishery related influences to better understand the factors that affect the population status.
- Thorny skate extend over a wide area. Research is required to determine stock structure of the species.
- Fishing mortality and its effects on the population are not well understood. Continued and enhanced collection of information on size, sex and maturity of commercial catches of thorny skate is required to define the effects of fishing on the population.
- Analysis of detailed, geo-referenced commercial fishery data for NAFO Div. 3NO corresponding to the directed skate fishery in the NRA is required to quantify by-catch levels and to spatially define species interactions.
- Information on annual yield potential and reproductive potential is required to provide quantitative fisheries management advice.
- The application of assessment models that may allow Scientific Council to provide quantitative fisheries management advice for this stock should be examined.

- h) *Information on the size composition in the current catches and comment on these sizes in relation to the size at sexual maturity.*

Minimum and maximum size and percent mature thorny skate in the commercial fisheries varied by year and country. Table shows size of thorny skate, proportion mature in the commercial trawl catches in Div. 3NO and size of codend mesh used.

Country	Area (Div.)	Year	Size Range (cm)	Percent mature	Codend Mesh Size (mm)
Canada	3O	1995-2002	27-99	20	300
Portugal	3NO	2002	18-61	1	
Spain	3NO	1997	13-91	34	220
		1999	28-91	42	220
		2000	25-91	46	220
		2001	25-91	49	220
		2002	30-96	53	280
Russia	3NO	2000	20-72	4	
		2001	27-90	50	280
		2002	30-102		280

Median size-at-maturity used to determine proportion of mature fish in the catches was 54 cm based on ogives developed by EU-Spain. Canada fished for thorny skate in the western part of Div. 3O while the other countries fished primarily in Div. 3N and to a lesser extent in Div. 3O.

d) **Monitoring of Stocks for which Multi-year Advice was Provided in 2002**

The Scientific Council in 2002 provided 2-year advice (for 2003 and 2004) for five stocks (cod in Div. 3M; American plaice in Div. 3M; witch flounder in Div. 3NO; yellowtail flounder in Div. 3LNO; and northern shortfin squid in Subareas 3 and 4). The Scientific Council reviewed the status of these five stocks at this meeting of June 2003, and found no significant change in status for any of the stocks. Therefore, the Scientific Council has not provided updated/revised advice for 2004 for these stocks. The next Scientific Council assessment of these stocks will be in 2004.

2. **Coastal States**

a) **Request by Canada for Advice** (Annex 2)

The Scientific Council was requested by the Coastal State Canada to *provide advice on stock distribution for Greenland halibut in Subareas 0-3 and recent trends for cod in Div. 2J3KL*.

This section provides the Scientific Council responses.

i) **Greenland halibut in Subareas 2 and 3** (Annex 2 Item 1)

Canada, in the request for advice from Scientific Council for 2003, included a specific request as follows: *Scientific Council has, in the past, advised that fishing effort for Greenland halibut in SA2 + 3KLMNO should be distributed in relation to biomass. Scientific Council is requested to comment on:*

- a) *the current distribution of the resource between SA2 + 3K and 3LMNO and comment on how this compares with the current distribution of quota allocation; and*
- b) *the appropriate distribution of quota allocation if it was based on the distribution of biomass.*

The Scientific Council responded:

- a) Canadian research survey data covering depths to 1 500 m suggest reasonable stability in the proportion of biomass in SA2+Div. 3K and Div. 3LMNO, ranging between 75% and 84% in SA2+Div. 3K, and averaging about 80% SA2+Div. 3K:20% Div. 3LMNO over the 7 years for which data are available. The quota table information indicates that the distribution of quota is in the proportion of 26% SA2+Div. 3K:74% Div. 3LMNO. This is based on a total quota of 42 000 tons with 31 122 tons being allocated to Div. 3LMNO.
- b) If the 2003 quota for Greenland halibut in SA2+Div. 3KLMNO was apportioned according to biomass distribution, the split would be 33 802 tons (80%) from SA2+Div. 3K and 8 198 tons (20%) from Div. 3LMNO.

ii) **Cod in Divisions 2J and 3KL** (Annex 2 Item 3)

Canada requested: *For the cod stock in Divisions 2J+3KL, the Scientific Council is requested to report on recent trends in the total and spawning biomass based on the most recent Stock Status Report.*

The Scientific Council responded:

The total and spawning biomass indices are both extremely low relative to historic levels.

Information is available for the offshore and the inshore, but not for the two combined.

For the offshore, the total biomass index from the autumn bottom-trawl survey in 2002 remained extremely low at only 2% of the average in the 1980s. A spawning biomass index computed from the

same surveys and commercial weights-at-age remained at less than 2% of the biomass in the 1980s. Furthermore, the total biomass index from the spring bottom-trawl survey in Div. 3L is currently less than 1% of the average in the 1980s.

For the inshore, the results of a virtual population analysis, applied for the first time to fish in the inshore alone, indicated that the exploitable (4+) biomass increased from 1995 to a peak in 1996 and subsequently declined to a low level in 2002, from which there was a small increase in 2003. The spawning biomass increased from 1995 to a peak of 41 000 tons in 1998, and has subsequently declined to 14 000 tons at the beginning of 2003.

b) Request by Denmark (Greenland) for Advice (Annex 3)

The Scientific Council was requested by the Coastal State Denmark (Greenland) to *provide advice for various stocks*.

The Council consideration on these stocks is reported below:

- i) Multi-year advice for demersal redfish and other finfish in Subarea 1 (Annex 3 Item 2)

Demersal Redfish (*Sebastes spp.*) in Subarea 1

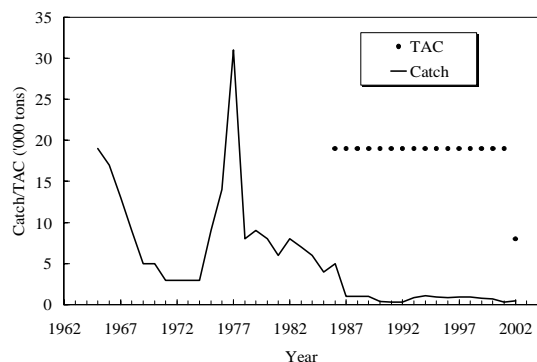
Background: There are two species of commercial importance in Subarea 1, golden redfish (*Sebastes marinus*) and deep-sea redfish (*Sebastes mentella*). Relationships to other North Atlantic redfish stocks are unclear.

Fishery Development and Catches: During the last decade, redfish were taken mainly as by-catch in the trawl fisheries for cod and shrimp. Both redfish species were included in the catch statistics since no species-specific data were available. Recent catch figures do not include the weight of small redfish discarded by the trawl fisheries directed to shrimp.

Year	Catch ¹ (‘000 tons)	TAC (‘000 tons)	
		Recommended	Autonomous
2000	0.7	ndf	19
2001	0.3	ndf	19
2002	0.5	ndf	8
2003		ndf	

¹ Provisional.

ndf No directed fishing, by-catch be at the lowest possible level.

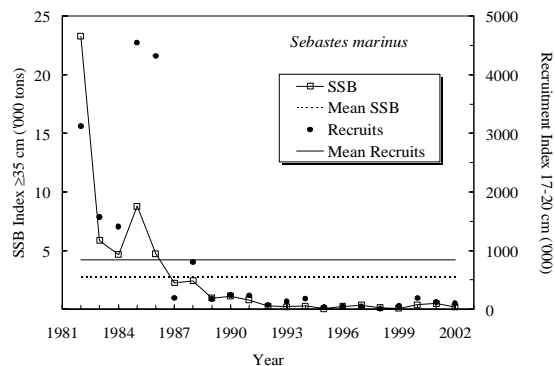


Data: No data on commercial CPUE were available. Spawning stock biomass and recruitment indices were calculated based on EU-Germany groundfish surveys.

Assessment of Golden Redfish: No analytical assessment of *Sebastes marinus* was possible.

Recruitment: Recruitment index has been low during the last decade.

SSB: SSB index has remained at the historical low level since 1989.

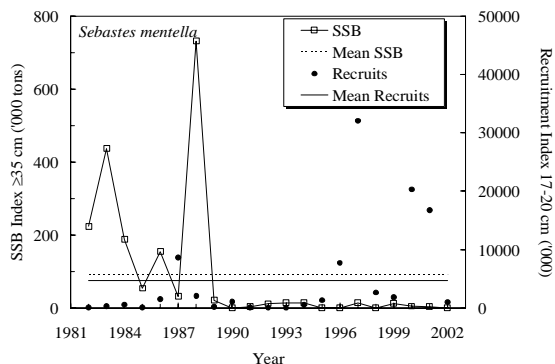


State of the Golden Redfish Stock: The stock of golden redfish in Subarea 1 remains severely depleted. There are indications that the probability of future recruitment is reduced at the current low SSB. Short-term recovery is very unlikely.

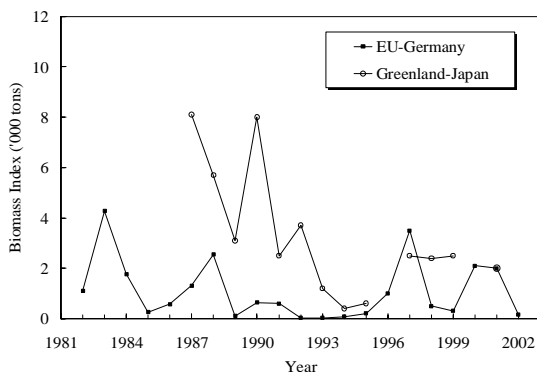
Assessment of Deep-sea Redfish: No analytical assessment of *Sebastes mentella* was possible.

Recruitment: Recruitment variation for deep-sea redfish is high, although there is indication of recent improvement (1997, 2000 and 2001).

SSB: SSB index remained at the historical low level since 1989.



Biomass: Total stock biomass indices were low in 1998-99, increased in 2000 and 2001, but decreased again in 2002. However survey coverage in 2002 was incomplete. The stock is composed of mostly immature fish.



State of the Deep-sea Redfish Stock: The spawning stock of deep-sea redfish in Subarea 1 remains severely depleted, and an increase is unlikely in the short term.

Recommendation for Golden and Deep-sea Redfish Stocks: No directed fishery should occur on redfish in Subarea 1 in 2004 and 2005. By-catches in the shrimp fishery should be at the lowest possible level.

Special Comments: The probability of recovery of the redfish stocks in Subarea 1 would be enhanced if the by-catch of demersal redfish taken in the shrimp fishery is significantly reduced.

Sources of Information: SCR Doc. 03/20, 29, 15, 33, 35; SCS Doc. 03/8, 16.

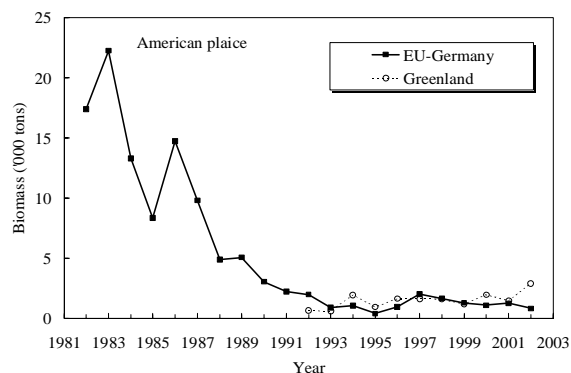
Other Finfish in Subarea 1

Background: The resources of other finfish in Subarea 1 are mainly Greenland cod (*Gadus ogac*), American plaice (*Hippoglossoides platessoides*), Atlantic and spotted wolffishes (*Anarhichas lupus* and *A. minor*), thorny skate (*Raja radiata*), lumpsucker (*Cyclopterus lumpus*), Atlantic halibut (*Hippoglossus hippoglossus*) and sharks. No recommendations can be made for Greenland cod, lumpsucker, Atlantic halibut and sharks.

Fishery Development and Catches: Greenland cod and lumpsucker are taken inshore by directed fisheries. Other species are mainly taken as by-catch offshore in trawl fisheries directed to shrimp and Greenland halibut. In 2002, reported catches of other finfish amounted to 7 437 tons, representing an increase by about 2 400 tons, compared to the 2001 catch (5 800 tons). This was mainly caused by an increase in catch of lumpsucker. The catch figures do not include the weight of fish discarded by the trawl fisheries directed to shrimp.

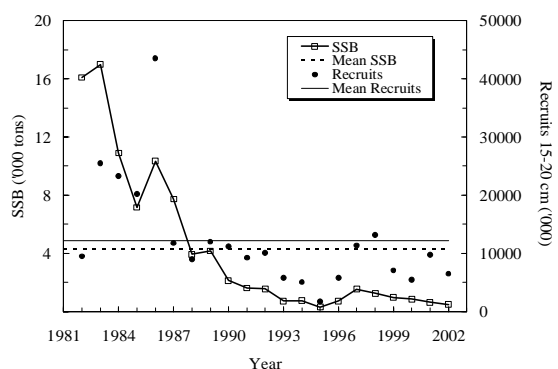
Data: No data on CPUE, length and age composition of the catches were available. Length frequencies were derived from the Greenland bottom trawl surveys. Assessments of recent stock abundance, biomass, and size structure for these stocks were based on annual bottom trawl surveys conducted by EU-Germany and Greenland. Spawning stock biomass and recruitment indices for American plaice and Atlantic wolffish were derived from EU-Germany survey data.

Assessment of American plaice: No analytical assessment was possible.



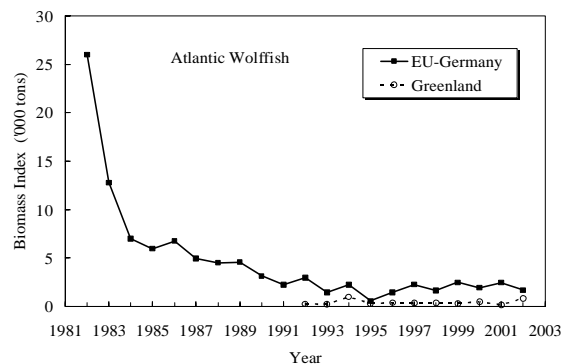
Recruitment: Indices indicate a general higher level before 1991 compared to recent years.

Biomass: During 1982-91, the SSB and total biomass index decreased drastically to a very low level without a significant increase since then.



State of the American plaice stock: The stock remains severely depleted.

Assessment of Atlantic wolffish: No analytical assessment was possible.

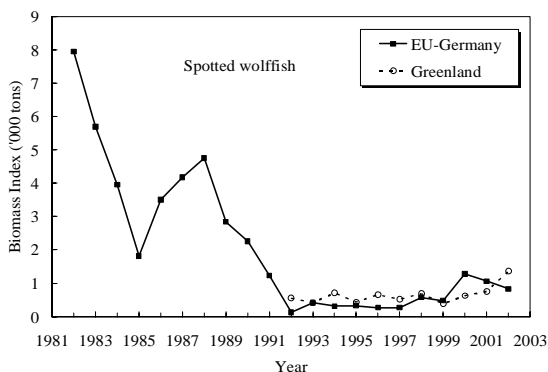


Recruitment: Index increased steadily since the 1980s but varied considerably since 1995.

Biomass: Since 1982, the SSB and total biomass index decreased drastically and remained severely depleted since the early-1990s.

State of the Atlantic wolffish stock: The stock remains severely depleted despite a steady increase in recruitment since the early-1980s.

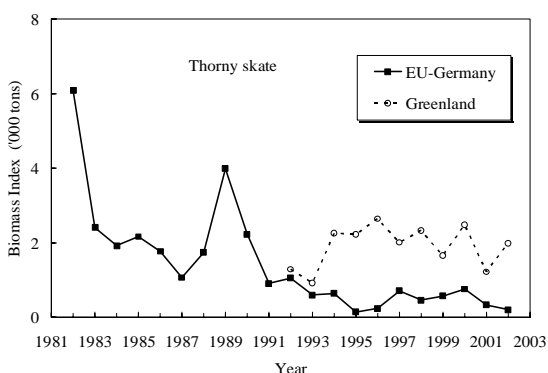
Assessment of spotted wolffish and thorny skate: No analytical assessment was possible.



Special Comments: The probability of recovery of these stocks would be enhanced if the by-catch taken in the shrimp fishery is significantly reduced.

The increase in lumpsucker catches together with the lack of information of the stock status is raising concern.

Sources of Information: SCR Doc. 03/20, 29, 15, 33, 35 SCS Doc. 03/8, 16.



Biomass: Survey results revealed dramatic declines for spotted wolffish and thorny skate to a very low level.

State of the stocks of spotted wolffish and thorny skate: The stocks of spotted wolffish and thorny skate remain severely depleted.

Recommendation for the stocks of American plaice, Atlantic wolffish, spotted wolffish and thorny skate: No directed fishery in Subarea 1 for American plaice, Atlantic wolffish, spotted wolffish and thorny skate should occur in 2004 and 2005. By-catches of these species in the shrimp fisheries should be kept at the lowest possible level.

Reference points: For all these stocks, Scientific Council is not in a position to propose reference points at this time.

ii) Roundnose grenadier in Subareas 0 and 1 (monitor) (Annex 3 Item 1)

In the Scientific Council report of 2002 scientific advice on management of roundnose grenadier in Subareas 0+1 was given as 3-year advice for 2003, 2004 and 2005. Denmark, on behalf of Greenland, requested the Scientific Council to: *continue to monitor the status of roundnose grenadier in Subareas 0+1 annually and, should significant changes in stock status be observed (e.g. from surveys), the Scientific Council is requested to provide updated advice as appropriate.*

The Scientific Council responded:

At its June 2002 meeting, Scientific Council provided 3-year advice for 2003, 2004 and 2005 for roundnose grenadier in Subareas 0+ 1. The Scientific Council reviewed the status of this stock at this June 2003 meeting and found no significant changes in the status. Therefore, Scientific Council has not provided updated/revised advice for 2004. The next Scientific Council assessment of this stock will be in 2005.

iii) Greenland halibut in Division 1A Inshore (Annex 3 Item 3)

Greenland Halibut (Reinhardtius hippoglossoides) in Division 1A inshore

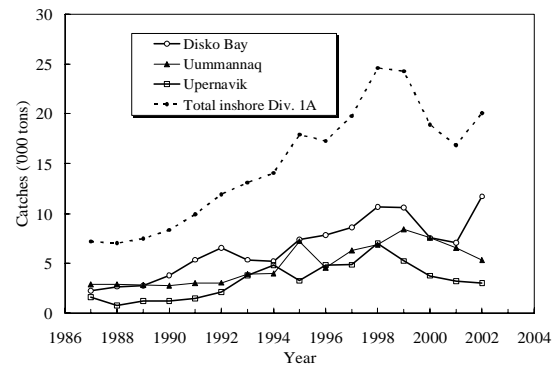
Background: The inshore stock is dependent on the spawning stock in Davis Strait and immigration of recruits from the offshore nursery grounds in Div. 1A and 1B. Only sporadic spawning seems to occur in the fjords, hence the stock is not considered self-sustainable. The fish remain in the fjords, and do not appear to contribute back to the offshore spawning stock. This connection between the offshore and inshore stocks implies that reproductive failure in the offshore spawning stock for any reason will have severe implications for the recruitment to the inshore stocks.

Fishery and Catches: The fishery is mainly conducted with longlines and to a varying degree gillnets. Total landings in all areas were around 7 000 tons in the late-1980s but then increased gradually until 1998 when the landings were almost 25 000 tons. Landings then declined to 16 900 tons in 2001 but increased again to 20 000 tons in 2002. The decline in landings observed in most recent years continued in Uummannaq and Upernavik while landings increased abruptly in Disko Bay in 2002. The increase in landings in Disko Bay in 2002 is a result of a rise in effort. The effort in Upernavik in 2002 was reduced due to various reasons.

	Catch ('000 tons)		TAC ('000 tons)	
	Year		STACFIS	21A
Disko Bay	2000		7.6 ^{1,2}	7.9
	2001		7.0 ¹	7.9
	2002		11.7 ¹	7.9
	2003			7.9
Uummannaq	2000		7.6 ^{1,2}	6.0
	2001		6.6 ¹	6.0
	2002		5.4 ¹	6.0
	2003		6.0	
Upernavik	2000		3.8 ^{1,2}	4.3
	2001		3.2 ¹	4.3
	2002		3.0 ¹	4.3
	2003		2.4	

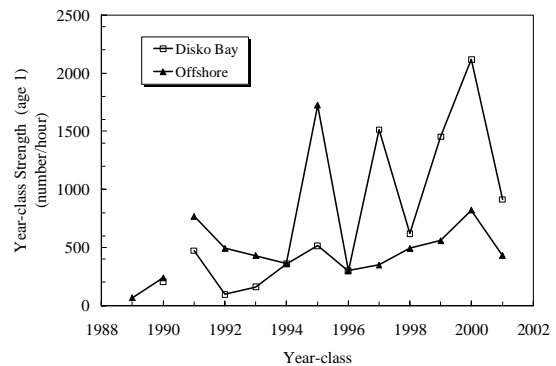
¹ Provisional

² The total catches are likely to have been underestimated by about 2 000 tons in Div. 1A inshore total.



Data: Data were available on length composition in the commercial landings. A recruitment index for age 1 was available from the Greenland shrimp trawl survey.

Assessment: Data deficiencies for 2002, both for commercial and survey data, in combination with landing statistics not divided on gears, impedes an updated assessment of the populations.



Recruitment: In the traditional offshore nursery areas the numbers of one-year-olds from the 2001 year-class were a little below average, while it was a little above average in the Disko Bay. The strong 2000 year-class also appeared to be relatively strong at age 2 in Disko Bay. There is uncertainty to what degree these year-classes will contribute to the inshore fishery in the future.

State of the Stock: Scientific Council is not able to evaluate the state of the stock due to lack of relevant information.

Recommendation: Scientific Council still considers that separate TACs are appropriate for each of the three areas.

Due to lack of recent data Scientific Council is not able to update its advice from that proposed in 2002.

Reference Points: Scientific Council is not in a position to propose reference points.

Special Comments: The TAC values for Disko Bay and Uummannaq were proposed in the 1998 Scientific Council report to prevent escalating effort and are based on the average catches for 1995-97. The TAC for Upernavik of 2 400 tons (25% below the catches in 2001) was proposed in 2002 based on a continued decline in survey indices since 1994 concurrent with a decrease in catches since 1998.

Because the stock is dependent on recruitment from Davis Strait, exploitation of the spawning stock and by-catches in the shrimp fishery should be taken into account when managing the fishery in the fjords.

Sources of Information: SCR Doc. 03/29, 49; SCS Doc. 03/16.

c) **Request by Canada and Denmark (Greenland) for Advice on TACs and Other Management Measures** (Annexes 2 and 3)

The Scientific Council was requested by the Coastal States Canada and Denmark (Greenland) to: *provide advice on Greenland halibut in Subareas 0 and 1*. This section presents the Scientific Council advice for the year 2003.

Scientific Council noted the request usually makes reference to Greenland halibut in Subareas 0 and 1. The Council noted that the specific stock area to be addressed under this request is Greenland halibut in Subarea 0, Div. 1A offshore and Div. 1B-1F. The Council considerations are as given below.

Greenland Halibut (*Reinhardtius hippoglossoides*) in Subarea 0 + Division 1A Offshore and Divisions 1B-1F

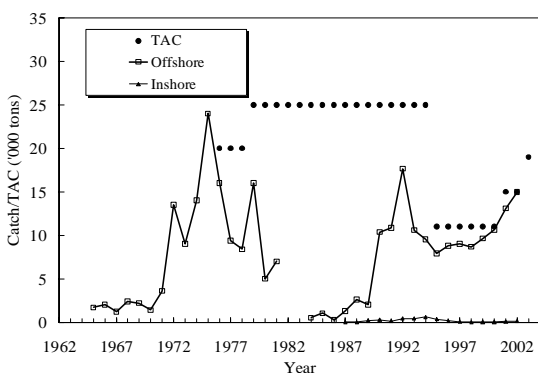
Background: The Greenland halibut stock in Subarea 0 + Div. 1A offshore and Div. 1B-1F is part of a common stock distributed in Davis Strait and southward to Subarea 3.

Fishery and Catches: Due to an increase in offshore effort, catches increased from 2 000 tons in 1989 to 18 000 tons in 1992 and have remained at about 10 000 tons annually until 2000. Catches increased to 13 000 tons in 2001, primarily due to increased effort in Div. 0A and further to 15 000 in 2002, primarily due to an increase in effort in Div. 1A.

Year	Catch ('000 tons)		TAC ('000 tons)	
	STACFIS	21A	Recommended	Agreed
2000	11	7 ¹	11	11
2001	13	13 ¹	15 ²	15
2002	15	12 ¹	15 ²	15
2003			19 ²	

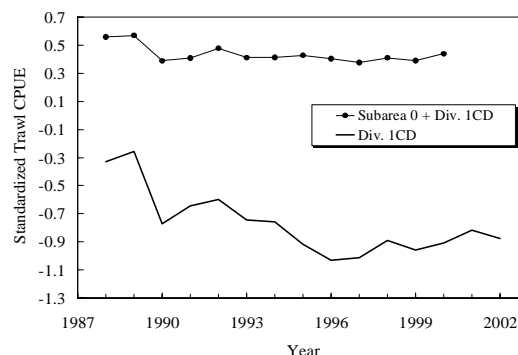
¹ Provisional.

² Including 4 000 tons allocated specifically to Div. 0A and 1A in 2001 and 2002 and 8 000 tons in 2003.



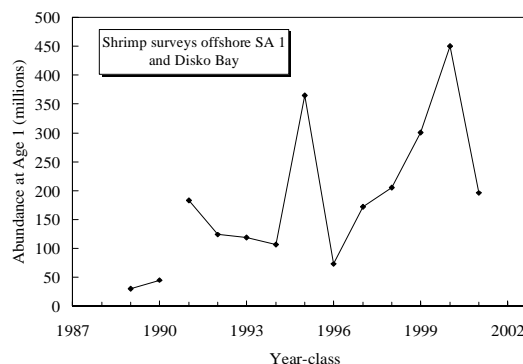
Data: Catch-at-age data were available for assessment from SA0 and SA1. Standardized and unstandardized catch rates were available from Div. 0A, Div. 1A and 1CD. Biomass estimates from 2001 surveys were available from Div. 1A-D and Div. 0AB. Biomass estimates from 2002 surveys were available from Div. 1CD, only. Recruitment data were available from surveys in Div. 1A-1F from 1989-2002.

Assessment: No analytical assessment could be performed. Combined standardized catch rates for SA 0 + Div. 1CD during 1990-2000 and standardized catch rates from Div. 1CD during 1990-2002 have been stable. Unstandardized catch rates in Div. 0A increased between 2001 and 2002 while they were stable in Div. 1A.

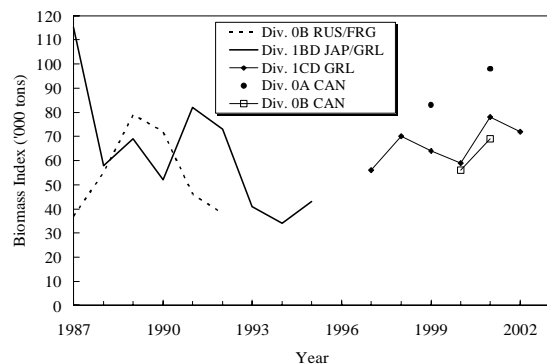


Fishing Mortality: Level not known.

Recruitment: Recruitment of the 2000 year-class at age 1 was the largest in the time series, while the 2001 was a little below average.



Biomass: The biomass in Div. 1CD in 2002 was estimated at 72 000 tons, the second highest in the six years time series.



State of the Stock: The age composition in the catches has been stable in recent years. Based on survey indices the stock has been increasing since 1994 and is now at the level of the late-1980s and early-1990s

Recommendation: As indicated Scientific Councils response to the costal states (see VII.2.c) Scientific Council **recommends** that Div. 1B be included in the management area with Div. 0A and Div. 1A.

Considering the relative stability in biomass indices and CPUE rates, for Greenland halibut in Div. 0B and 1C-1F the TAC for year 2004 should not exceed 11 000 tons

In 2002, Scientific Council advised a catch of 8 000 tons for the developing fisheries in Div. 0A+1A. This was considered to generate a relatively low F based on available data. Until sufficient data are available to more fully evaluate the state of this stock, Scientific Council advises that this level of catch not be exceeded. Scientific Council therefore advises a TAC of 8 000 tons for Greenland halibut in Div. 0A+1AB for 2004.

Reference Points: Scientific Council is not in a position to propose reference points at this time.

Sources of Information: SCR Doc. 03/20, 29, 33, 41, 50, 53, 54; SCS Doc. 03/6, 8, 10, 12, 16.

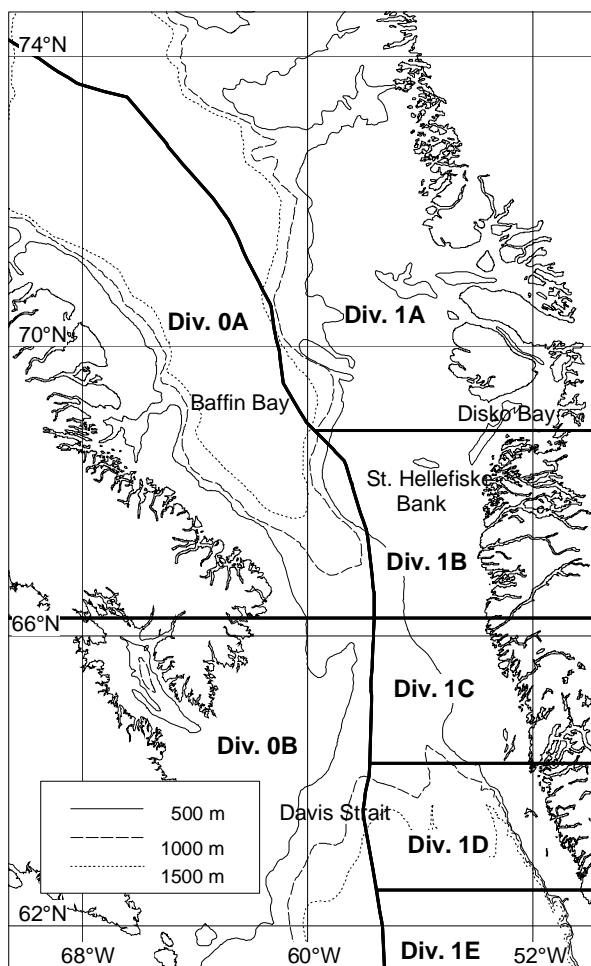
Responses Specific to Requests by Canada:

Canada had noted Greenland halibut in the offshore area of Division 0A+1A is currently being managed separately from the remainder of SA 0+1. However, given the bathymetry of Baffin Bay and its proximity to the NAFO boundaries of Div. 0A, 1A and 1B, the Scientific Council was requested to:

- a) *advise on whether it is more appropriate for management purposes to include Division 1B with the current management area of offshore Divisions 1A+0A or have it remain in the current management area of Divisions 0B+1B-F* (See Annex 2, Item 1).

The Council responded:

In 2000 Scientific Council advised that an additional TAC of 4 000 tons may be set for Div. 0A and 1A combined based on survey results for Div. 0A. Given the bathymetry of Baffin Bay and its proximity to the NAFO boundaries of Div. 0A, 1A and 1B it would have been more appropriate to set the TAC for Div. 0A+1AB. Scientific Council therefore **recommended** that Div. 1B *be included in the management area with Div. 0A and 1A*. (map below shows NAFO boundaries, depth contours and place names).



Canada requested the Scientific Council to:

- b) *advise on appropriate TAC levels for 2004, separately, for Greenland halibut in the offshore area of Divisions 0A+1A (plus Division 1B depending on the result of (a) above) and Divisions 0B+ 1C-F (plus Division 1B depending on the result of (a) above (See Annex 2, Item 1).*

The Council responded:

Considering the relative stability in biomass indices and CPUE rates, for Greenland halibut in Div. 0B and 1C-F the TAC for year 2004 should not exceed 11 000 tons.

In 2002, Scientific Council advised a catch of 8 000 tons for the developing fisheries in Div. 0A+1A. This was considered to generate a relative low F based on available data. Until sufficient data are available to more fully evaluate the state of this stock, Scientific Council advises that this level of catch not be exceeded. Scientific Council therefore advises a TAC of 8 000 tons Greenland halibut in Div. 0A+1AB for 2004.

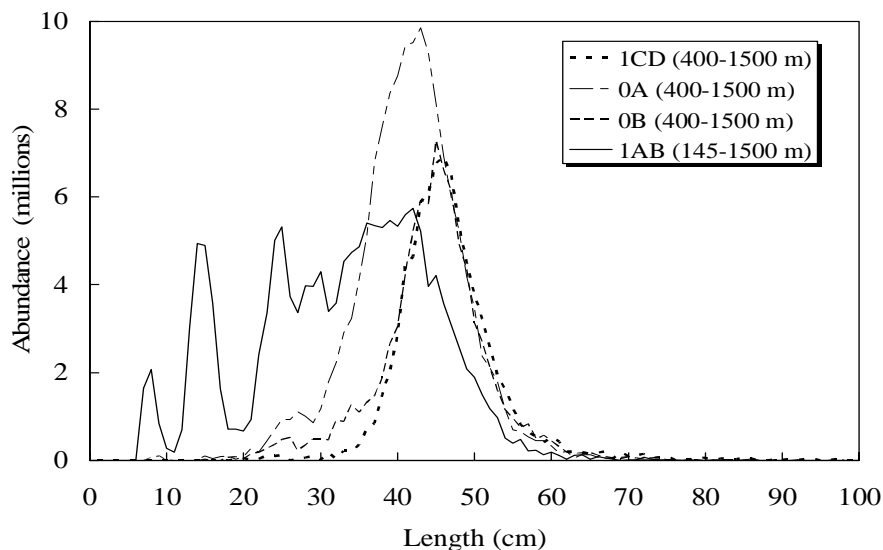
Canada requested the Scientific Council to:

- c) *comment on the Greenland halibut size composition throughout SA 0+1 (offshore), the potential relationship between fish in Baffin Bay and Davis Strait and the impact of harvesting on these stock components; (See Annex 2, Item 1)*

The Council responded:

The fish are generally smaller in Div. 0A+1AB (see length distribution Fig. below), but in both areas size increases with depth. In the Canadian trawl fishery in Div. 0A in 2002 38% of the fish caught were <46 cm compared to 21% in Div. 0B (SCR Doc. 03/50). In Div. 1A 50.8 % and 33.8% of the fish caught by Russia (SCS Doc. 03/6) and Faroe Islands, respectively, were <46 cm. In Div. 1D 9.6%, 15.8% and 23.2% of the catches taken by EU/Germany, Faeroe Islands and Russia (SCS Doc. 03/06), respectively, were <46 cm, while 25.1% of the fish taken by Norway were <46 cm (SCR Doc. 03/33). The differences in length composition within Divisions amongst the different fleets probably reflect differences in fishing depth. (The length distributions from EU-German and Faroe Islands vessels were sampled by Greenland observers.)

Length distribution for depths 400-1 500 m from otter trawl surveys conducted by Canada and Greenland in 2001.



Greenland halibut in the Baffin Bay and the Davis Strait are believed to belong to the same stock. Tagging experiments have shown that Greenland halibut migrate from the Baffin Bay to the Davis Strait, probably to spawn (SCR Doc. 99/25). A fishery in the Baffin Bay will probably reduce the numbers that migrates to the Davis Strait but the impact can not be estimated. The fishing mortality in the Baffin Bay is, however, considered to be relatively low.

Canada requested the Scientific Council to:

- d) *advise on the most appropriate protocols for the conduct of exploratory fisheries in Division 0A north of 71°30'N including precautionary catch limits.* (See Annex 2, Item 1).

The Council responded:

The area north of 71°30'N in Canada and north of 74°N in Greenland has not been surveyed and the distribution and size composition of the Greenland halibut stock in the area is not known. Until such surveys have been conducted the fishing effort should be restricted and it should be ensured that logbooks from such a fishery, including information on CPUE, fishing depths and position, are made available. Further, information on size composition should be recorded on a tow by tow basis, through the use of 100% coverage by onboard observers. Catches should be included in the TAC (8 000 tons).

Responses Specific to Requests by Denmark (Greenland)

Denmark (Greenland) noted: *subject to the concurrence of Canada as regards Subarea 0, the Scientific Council is requested to provide advice on the scientific basis for management of Greenland halibut overlapping Subarea 0 and 1 in 2004, and as many years forward as data allow* (Annex 3, Item 3).

The Council responded:

See the response given to Canada in item b) above.

Denmark (Greenland) noted: *given the bathymetry of Baffin Bay and Davis Strait, the Scientific Council on whether it is more appropriate for management purposes to include Division 1B with current management of offshore Divisions 1A+0A or have it remain in the current management area of Divisions 0B+1B-1F.* (Annex 3, Item 3).

The Council responded:

See the response given to Canada in item a) above.

Further Denmark (Greenland) asked the Scientific Council to: *advise on the most appropriate protocols for the conduct of exploratory fisheries in Divisions 1A north of 74°N including precautionary catch limits* (Annex 3, Item 3).

The Council responded:

See the response given to Canada in d) above.

Further, Denmark (Greenland) asked the Scientific Council to: *for Subarea 1A inshore, provide advice on allocation of TACs distributed in the areas of Ilulissat, Uummannaq and Upernavik, respectively* (Annex 3, Item 3).

The Council responded:

Scientific Council still considers that separate TACs are appropriate for each of the three areas.

Due to lack of recent data Scientific Council is not able to update its advice from that proposed in 2002.

Denmark (Greenland) asked the Scientific Council: in its advice *to assess the impact from the offshore fisheries in Baffin Bay and Davis Strait on the status and trends of the Subarea 1A inshore stock components, and vice versa* (Annex 3, Item 3).

The Council responded:

Greenland halibut spawn in the Davis Strait. There has been little evidence of spawning in Baffin Bay and inshore areas. Eggs and larvae drift with the currents from Davis Strait towards the main nursery area in the Disko Bay and Store Hellefiske Bank where they settle. Some larvae probably drift further north into the Baffin Bay or to the Canadian coast. Larvae settle at 200-300 m depth and start to migrate towards greater depths as they grow. At Northwest Greenland some will migrate into the fjords, others into the Baffin Bay. From Store Hellefiske Bank fish will migrate either into the Disko Bay or out into the Davis Strait. The off shore fishery takes place at depth >800 m and fish at that depth will probably not migrate back to the shallow areas where they originally settled and then into the fjords. This is supported by tagging experiments because only very few fish tagged off shore in the Baffin Bay have been captured in inshore areas (SCR Doc. 99/25). Hence the off shore fishery will probably not affect the inshore fishery. However, the connection between the offshore and inshore stocks implies that reproductive failure in the offshore spawning stock for any reason will have severe implications for the recruitment to the inshore stocks. A reduction in the abundance of juveniles on the shallow nursery grounds of the Banks due to by-catch will probably also reduce the recruitment to the inshore stocks.

Tagging experiments have shown that fish migrated into the fjords, stay there and do not contribute back to the spawning biomass in the Davis Strait (SCR Doc. 99/25).

3. Scientific Advice from the Council on its Own Accord

a) Roughhead Grenadier in Subareas 2 and 3

The Scientific Council on its own accord considered roughhead grenadier in Subareas 2 and 3 as given below:

Roughhead Grenadier (*Macrourus berglax*) in Subareas 2 and 3

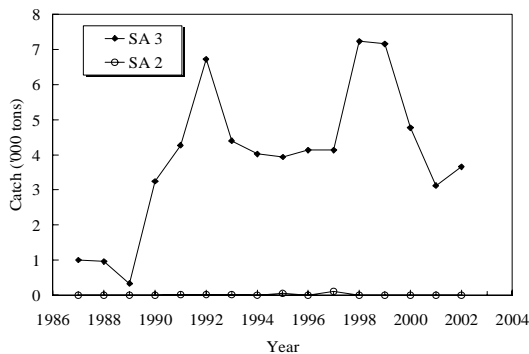
Background: Roughhead grenadier are distributed throughout Subareas 2 and 3 in depths between 300 and 2 000 m. This is not a regulated species

Fishery and Catches: There is no directed fishery for roughhead grenadier and most of the catches are taken as by-catches in the Greenland halibut fishery in Subareas 2 and 3. Roughhead grenadier is taken mainly in Div. 3LMN Regulatory Area. At the beginning of the Greenland halibut fishery in Subarea 3 of the Regulatory Area in 1988, the grenadier catches were systematically misreported as roundnose grenadier. Since 1997 the roughhead catches have been correctly reported, but the mis-reporting problem is not still solved in the statistics prior 1996. The level of catches remains uncertain in Subareas 2 and 3 before the start of the Greenland halibut fishery in the Regulatory Area.

Catches since 2000 are as follows:

	Catch ('000 tons)	
	STACFIS	STATLANT 21A
2000	4.8	2.7 ¹
2001	3.2	1.6 ¹
2002	3.7	1.9 ¹

¹ Provisional

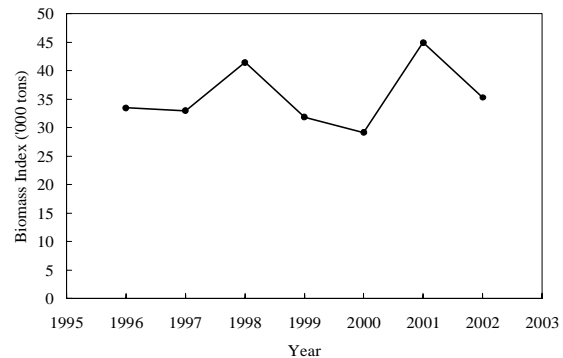


Data: Biomass indices were derived from: the Canadian stratified bottom trawl autumn surveys in Div. 2GHJ and 3KL since 1978, the Canadian stratified random bottom trawl spring surveys in Div. 3LN since 1971, the Canadian stratified deepwater bottom trawl surveys in Div. 3KLMN in 1991, 1994 and 1995, the EU (Spain and Portugal) stratified bottom trawl summer survey in Div. 3M since 1988. The EU (Spain-Portugal) longline deepwater survey in

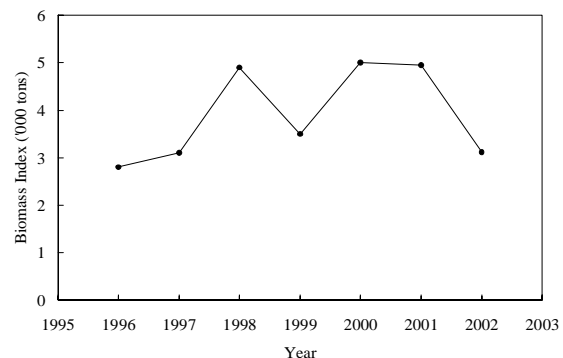
Div. 3LMN in 1996 provided information on the roughhead grenadier depth distribution.

Assessment: No analytical assessment was possible with current data.

Biomass: The Canadian autumn survey biomass index, which is the best input for the assessment of this stock, has been rather stable since 1996.



Fishing mortality proxy: The catch / biomass (C/B) index obtained using the Canadian autumn survey biomass index has been declining since 1997.



Recruitment: Not known.

State of the Stock: The state of the stock is not known.

Reference Points: Scientific Council is not in a position to propose reference points at this time

Special Comments: It should be noted that immature fish constituted 80% of the catch in 2002.

The next assessment will be in 2005.

Sources of information: SCR Doc. 03/9, 13, 42; SCS Doc. 03/6, 7, 13.

VIII. FUTURE SCIENTIFIC COUNCIL MEETINGS 2003 AND 2004

1. Scientific Council Meeting and Special Session, September 2003 Dartmouth, NS, Canada

The Council reconfirmed that the Annual Meeting will be held during 15-19 September 2003 in the Holiday Inn, Harbourside in Dartmouth, Nova Scotia, Canada. The Scientific Council Workshop on "Mapping and Geostatistical Methods for Fisheries Stock Assessments" will be held during 10-12 September 2003 at the same venue.

2. Scientific Council Meeting, October/November 2003 (assessment of shrimp stocks) Dartmouth, NS, Canada

Scientific Council at its 6-13 November 2002 meeting discussed the possibility of extending its October/November 2003 meeting to accommodate the ICES request to assess northern shrimp stocks in the Northeast Atlantic. Recent communication with the ICES Secretariat indicated that a 2003 meeting would be premature and that planning for such a meeting for 2004 could be undertaken in the interim. Noting this, the Council revised the previously proposed dates and shortened the meeting period.

The Scientific Council confirmed the meeting will be held during 5-11 November 2003 at NAFO Headquarters in Dartmouth, NS, Canada.

3. Scientific Council Meeting, June 2004

The Scientific Council reconfirmed the meeting will be held during 3-17 June 2004, at Alderney Landing, 2 Ochterloney Street, Dartmouth, NS, Canada.

4. Scientific Council Meeting and Special Session, September 2004

The Council noted that the Annual Meeting will be held during 13-17 September 2004 and the Scientific Council Special Session is scheduled for 8-10 September 2004. The venue has not been determined.

5. Scientific Council Meeting, November 2004 (assessment of shrimp stocks)

Taking into account the Council Meeting of November 2004 may include the ICES request to assess northern shrimp stocks in the Northeast Atlantic, the Scientific Council considers it premature to tentatively set dates for the 2004 northern shrimp assessment meeting. The dates and venue of the 2004 meeting will be discussed by the Council at the November 2003 Meeting. In the interim, the Chair of Scientific Council will communicate with the Chair of ACFM to initiate discussion on the roles and responsibilities of both parties, and the NAFO Secretariat will communicate with the ICES Secretariat to develop protocols for institutional arrangements. A report of these activities will be discussed by Scientific Council at the September 2003 Meeting.

IX. ARRANGEMENTS FOR SPECIAL SESSIONS

1. Progress Report on Special Session in 2003: Scientific Council Workshop on Geostatistics in Fisheries

A workshop entitled "Mapping and Geostatistical Methods for Fisheries Stock Assessments" on mapping and geostatistical methods for fisheries stock assessment will be held at the Holiday Inn in Dartmouth, NS during 10-12 September, 2003. Dr. Nicolas Bez, from the Centre de Geostatistique, Fontainebleau, France will be the principal instructor. Additional instructors will demonstrate and guide participants through exercises that utilize various GIS/geostatistical software programs and NAFO data sets. The workshop will be limited to 35 people and Scientific Council members must register for the workshop through the NAFO website by 15 August. The co-conveners, Lisa Hendrickson (USA) and Dave Kulka (Canada) will place information for this workshop on the NAFO website in the near future. Prior to the workshop, participants are encouraged to access the NAFO website to obtain a list of the workshop instructors, a course bibliography, and links to relevant geostatistical and mapping software programs.

2. Topics for Special Sessions in 2004

The Council noted there had been some previous discussion on the possibility of a Symposium focusing on Flemish Cap, particularly as there was some interests on the fisheries, biology, oceanography and ecosystems aspects.

The Council agreed a mini-Symposium titled “Ecosystem of the Flemish Cap” would be of interest. The Council requested Joanne Morgan (Canada) and Antonio Vazquez (EU-Spain) to undertake the convenership for this meeting, and prepare a formal proposal to be presented to the Council at its meeting in September 2003.

3. Topics for Special Session in 2005

A proposal for a Symposium considering an update on the Reproductive Potential of Fish was considered. It was recognized that the NAFO Working Group on Reproductive Potential as well as working groups at ICES are active on the subject. The Council requested this matter be addressed with Ed Trippel (Chair of the Working Group on Reproductive Potential) and a proposal for a Symposium be presented to the September 2003 Scientific Council Meeting.

Another proposal as an area of interest for a symposium was on the subject of the incorporation of environmental information into stock assessment. The Council agreed this subject should be further discussed at the Council Meeting of September 2003. The Council requested the STACFEN Chair to develop a proposal and take a lead role on the discussion. The Council noted other bodies such as ICES have also considered this as an area of interest.

X. REPORTS OF WORKING GROUPS

1. Working Group on Reproductive Potential (Chair: E. A. Trippel)

Progress of the NAFO Working Group on Reproductive Potential was provided by E.A. Trippel (Chair). The establishment of the Working Group on Reproductive Potential followed a recommendation of the Symposium on “Variations in Maturation, Growth, Condition and Spawning Stock Biomass Production in Groundfish” hosted by NAFO Scientific Council from 9-11 September 1998, Lisbon, Portugal. The Working Group is comprised of 21 members representing 8 countries (Canada, Denmark, Iceland, Norway, Russia, Spain, United Kingdom, and USA). Two meetings have been held to date, one in San Sebastian, Spain (October 2000) and one in St. Petersburg, Russia (October 2001). Previous updates of progress are provided in NAFO SCS Doc. 01/1 and 01/28.

Two publications are planned as products of the Working Group’s activities. A large volume of the *NAFO Scientific Council Studies* will be published containing short summaries and citation sources on stock structure and reproductive potential data (e.g., abundance, length-at-age data, maturation, condition, and fecundity) for 53 fish stocks (all of the NAFO stocks and several ICES stocks). A special volume of the *Journal of Northwest Atlantic Fishery Science* will be published by November 2003 that will contain 9 peer reviewed articles authored by members of the Working Group. Titles of the contributions fulfilling the first set of ToRs are:

ToR 1: Co-Leaders: J. Tomkiewicz (Denmark) and J. Burnett (USA)

Explore and review availability of information and existing data on reproductive potential by areas and species

- 1) *Available Information for Estimating Reproductive Potential of Northwest Atlantic Groundfish Stocks*
- 2) *The Availability of Data for Estimating Reproductive Potential for Selected Stocks in the North Atlantic (to be published in NAFO Scientific Council Studies)*

ToR 2 Co-Leaders: H. Murua (Spain) and A. Thorsen (Norway)

Explore possibilities to develop standard internationally coordinated research protocols to estimate egg and larval production

- 1) *Female Reproductive Strategies of Marine Fish Species of the North Atlantic*
- 2) *Procedures to Estimate Fecundity of Wild Collected Marine Fish in Relation to Fish Reproductive Strategy*
- 3) *Experimental Methods to Monitor the Production and Quality of Eggs of Captive Marine Fish*
- 4) *Integration of Captive and Wild Studies to Estimate Egg and Larval Production of Fish Stocks*
- 5) *Estimation of Male Reproductive Success of Marine Fish*

ToR 3 Co-Leaders: Y. Lambert (Canada) and N. Yaragina (Russia)

Explore and evaluate alternative methods to estimate reproductive potential annually or part of routine in monitoring and sampling schemes (such as HSI)

- 1) *Using Environmental and Biological Indices as Proxies of Egg and Larval Production of Marine Fish*

ToR 4 Co-Leaders T. Marshall (Norway) and G. Marteinsdottir (Iceland)

Review possibilities to develop methods and opportunities to estimate stock reproductive potential for assessment and management

- 1) *Developing Alternative Indices of Reproductive Potential for Use in Fisheries Management: Case Studies for Stocks Spanning an Information Gradient*
- 2) *Incorporating Early-Life History Parameters in the Estimation of the Stock-Recruit Relationship of Georges Bank Atlantic Cod (*Gadus morhua*)*

In addition to the papers listed above, the Working Group developed 27 recommendations for future activities. Scientific Council discussed the recommendations derived from the first set of terms of reference and agreed that the future direction of the Working Group as discussed at the June 2002 Scientific Council Meeting would focus on continuing to improve the quality and availability of data on fish reproductive potential and to explore means of integrating this information into fishery management advice. Terms of reference for future activities of the Working Group were discussed at the June 2002 Scientific Council Meeting and are given in the 2002 Scientific Council Report (page 47).

The 3rd meeting of the Working Group is scheduled for 15-18 October 2003 in Woods Hole, USA. Discussion will include progress on addressing the second set of ToRs and planning of future activities. New members to the Working Group include Chris Chambers (USA), Coby Needle (UK) and Rick Rideout (Canada).

The overlap with the ICES Study Group on SGGROMAT (Study Group on Growth, Maturity and Condition in Stock Projections) was discussed and noted to be positive. A recommendation was made to include 3LNO American plaice and 3NO Atlantic cod among the stocks examined when addressing the second set of ToRs.

2. Joint NAFO-ICES Working Group on Harp and Hooded Seals

A Workshop to Develop Improved Methods for Providing Harp and Hooded Seal Harvest Advice sponsored by the joint ICES/NAFO Working Group on Harp and Hooded Seals (WGHARP) was hosted by the US National Marine Fisheries Service in Woods Hole, MA, USA from 11-13 February 2003. Twenty-one scientists attended from the USA, Canada, Norway, Russia and Greenland. A number of working papers on the history of WGHARP, the models used to estimate abundance of harp seals in the NE and NW Atlantic and approaches to consider when identifying biological reference points were presented. In addition to these working papers, presentations describing data availability for harp and hooded seals and modeling approaches used by other organizations were given.

A total of 7 recommendations were made by the workshop including matters such as model formulation, data requirements and biological reference points. The Report of the Workshop will be reviewed by WGHARP in September 2003 and a full report of the Working Group Meeting and the Workshop will be presented to Scientific Council in June 2004. The report of the Workshop has been posted on the ICES website (www.ices.dk) and linked through the NAFO website (www.nafo.int).

XI. NOMINATION AND ELECTION OF OFFICERS

1. Chairs of all Standing Committees (STACFEN, STACPUB, STACREC, STACFIS)

A Nominating Committee composed of D. B. Atkinson (Canada), A. Vazquez (EU) and F. Serchuk (USA) proposed the following candidates. The Scientific Council noted these positions will be for a 2-year period beginning immediately after the September 2003 Meeting.

For the office of Chair of the Standing Committee on Publications (STACPUB), M. Stein (EU-Germany) was nominated by the Committee. There being no other nominations, the Council elected him by unanimous consent.

The Rules of Procedure determines that the elected Vice-Chair of the Scientific Council would take office of the Chair of Standing Committee on Research Coordination (STACREC). A. Vázquez (EU-Spain) was accordingly appointed to the office.

For the office of the Chair of the Standing Committee on Fisheries Environment (STACFEN), E. Colbourne (Canada) was nominated by the Committee. There being no other nominations, the Council elected him by unanimous consent.

The Nominating Committee regretted to inform the Council that for the office of Chair of the Standing Committee on Fisheries Science (STACFIS), no nomination could be made at this time. The Council noted that experts who usually attend the Scientific Council meetings were unable to commit to this position due to other duties that they hold. The Scientific Council Chair expressed his concern on this unfortunate development, and undertook to look into this situation well in advance of the September 2003 Council Meeting.

2. Chair and Vice-Chair of Scientific Council

For the office of the Chair of Scientific Council, the current Vice-Chair, M. J. Morgan (Canada) was nominated by the Committee. There being no other nominations, the Council elected her by unanimous consent.

For the office of the Vice-Chair of Scientific Council A. Vázquez (EU-Spain) was nominated by the Committee. There being no other nominations, the Council elected him by unanimous consent.

XII. REVIEW OF SCIENTIFIC COUNCIL WORKING PROCEDURES/PROTOCOL

1. Implementation of Precautionary Approach

a) Report of the March/April 2003 Scientific Council Workshop on PA

The Scientific Council held a workshop during 31 March to 4 April 2003, in St. John's, NL, Canada to further develop methodology for calculating biological reference points to be applied within the Precautionary Approach framework. Seven stocks, representing different life history characteristics and data availability, were chosen as candidates to explore various methods. The stocks included: Greenland halibut in Subarea 2 and Div. 3KLMNO, American plaice in Div. 3LNO, cod in Div. 3NO, yellowtail flounder in Div. 3LNO, redfish in Div. 3M, cod in Div. 3M, and northern shrimp in Subareas 0 and 1. In addition, the workshop reviewed the existing PA framework proposed by the Scientific Council in 1997, taking into account concerns expressed by fishery managers at several meetings

between members of the NAFO Fisheries Commission and Scientific Council that have taken place since 1998. A proposed revised framework was developed based on these discussions. The full report of the workshop, including a description of methods, results of application to the 7 stocks and the basis for the proposed revision of the PA framework, is given in SCS Doc. 03/05.

The Workshop noted that it is the responsibility of Scientific Council to calculate limit reference points. Given that a number of approaches for defining B_{lim} have been discussed in the literature, the Workshop concluded that a study group is needed to review the strengths and weaknesses of alternative approaches, and to make recommendations to Scientific Council on the most appropriate approaches to defining B_{lim} for NAFO stocks ranging from data-rich to data-poor situations and for a range of life history parameters.

Scientific Council endorsed this proposal and **recommended** that *a Study Group on the estimation of limit reference points be established. Peter Shelton (Canada) was named as a co-Chair with other co-Chairs to be selected from among the 2003 PA workshop participants, and the Co-Chairs explore with colleagues possible themes for a Study Group working session in 2004.*

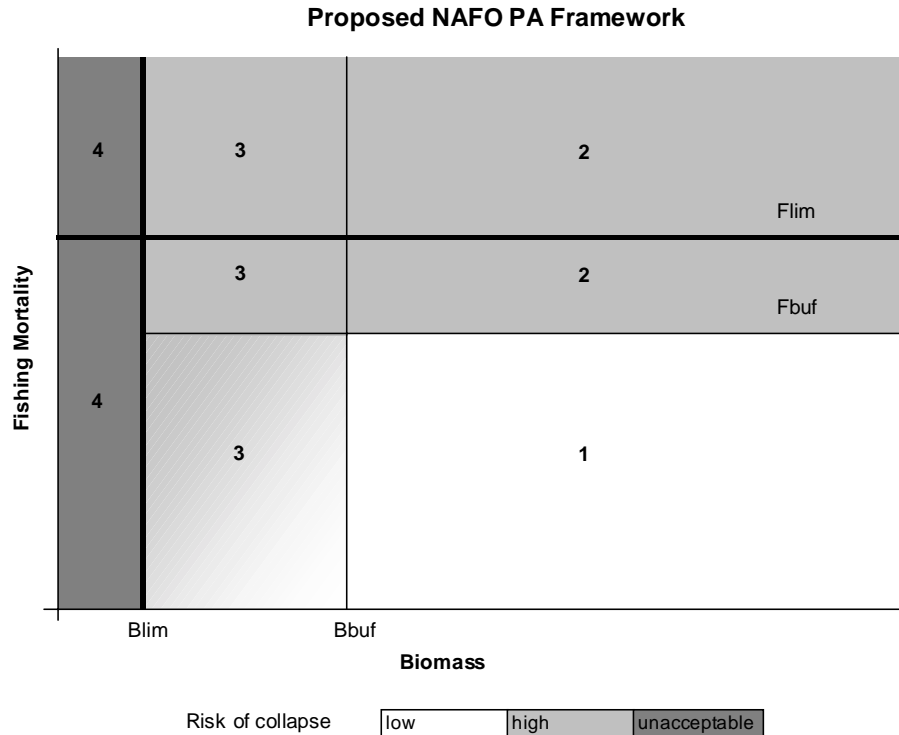
b) Further Development of NAFO Scientific Council PA Methodology

The revised PA framework developed by the March/April 2003 Workshop (SCS Doc. 03/05) was discussed at length at this June 2003 Scientific Council meeting and several areas of improvement were suggested. In particular, Scientific Council was concerned that the depiction of uncertainty with respect to the change in fishing mortality implied by the schematic between B_{buf} and B_{lim} could be presented in a clearer manner. A group of experts was tasked to evaluate the framework proposed by the Workshop and to incorporate modifications based on the suggestions from this Scientific Council Meeting. The resulting PA framework **as adopted** by the Scientific Council is given as follows.

The roles of Scientific Council and Fisheries Commission (as specified in FC Doc. 98/02) are as follows:

Scientific Council	Fisheries Commission
1. Determine status of stocks.	1. Specify management objectives, select target reference points, and set limit reference points.
2. Classify stock status with respect to biomass/fishing mortality zones.	2. Specify management strategies (courses of actions) for biomass/fishing mortality zones.
3. Calculate limit reference points and security margins.	3. Specify time horizons for stock rebuilding and for fishing mortality adjustments to ensure stock recovery and/or avoid stock collapse.
4. Describe and characterize uncertainty associated with current and projected stock status with respect to reference points	4. Specify acceptable levels of risk to be used in evaluating possible consequences of management actions.
5. Conduct risk assessments.	

The following is the proposed revised NAFO Precautionary Approach Framework prepared by the Council at this meeting. For stocks where the Scientific Council can conduct risk analyses, the security margins (F_{buf} and B_{buf}) will be based on the risk levels specified by the Fisheries Commission. For stocks where risk analyses are not possible, the Fisheries Commission will specify the security margins.



<i>Management Strategies and Courses of Action (Time horizons and acceptable risk levels specified by managers)</i>	
Zone 1	Safe Zone: Select and set fishing mortality from a range of F values that have a low probability of exceeding Flim in a situation where stock biomass (B) has a low probability of being below Blim. In this area, target reference points are selected and set by managers based on socio-economic management objectives.
Zone 2	Overfishing Zone: Reduce F to below Fbuf.
Zone 3	Cautionary F Zone: The closer stock biomass (B) is to Blim, the lower F should be below Fbuf.
Zone 4	Collapse Zone: F should set as close to zero as possible.

Having adopted this revised PA framework, the Scientific Council **recommended** that: *a meeting of the Joint Fisheries Commission/Scientific Council Working Group on the Precautionary Approach be held to discuss the implementation of the revised PA framework.*

2. NAFO Scientific Council Observership at ICES ACFM Meetings

The Council addressed the availability of experts to represent NAFO Scientific Council at ICES Meetings. It was noted that most Scientific Council participants were busy with other activities during the spring ACFM meetings. Chris Darby indicated he would be in a position to obtain details.

3. **Analytical Basis for an Interim Monitoring Evaluation**

At its September 2002 Meeting, Scientific Council noted that the basis for the interim monitoring of stock status varies among stocks and a consistent analytical approach has yet to be determined. Following some discussion at the present meeting Scientific Council reiterated that the intent of the interim monitoring process is to determine whether there has been sufficient change in the status of a stock to warrant reconsideration of the multi-year advice developed in a previous year. While noting that the ultimate decision on the content of the interim monitoring report is the responsibility of the Designated Expert, Scientific Council agreed that an examination of catches and updated survey indices should be sufficient to make the status determination, and that model based approaches should not be necessary.

4. **Facilitating Workload of Scientific Council during Annual Meeting in September**

Scientific Council again discussed the issue of providing advice to the Fisheries Commission on Div. 3M and Div. 3LNO stocks of northern shrimp. A proposal was developed at the November 2002 Scientific Council Meeting in which the advice developed at the meetings in November will be evaluated at the following September Scientific Council Meeting based on additional data acquired during the interim. The evaluation will take the form of an interim monitoring report to determine if the additional information provides sufficient basis to alter the advice developed at the previous November meeting. If this arrangement proves to be problematic in September, Scientific Council may consider having the Div. 3LNO shrimp interim report evaluated at its June meetings.

5. **Facilities and Technological Support**

The implementation of a wireless LAN system at the PA Workshop and at the present June Scientific Council meeting has added a great deal of flexibility and increased efficiency in completing the meeting agenda. Scientific Council thanked the staff at the Northwest Atlantic Fisheries Centre, St. John's, Newfoundland and Labrador for providing their support and technological expertise for this LAN system.

At this June Scientific Council Meeting, the installation of Netmeeting software allowed direct control of the LCD projector from any station at the meeting. The Council agreed a similar wireless configuration will be required at future Scientific Council Meetings.

6. **Reconsidering a Memorandum of Understanding with ICES**

Further to Scientific Council comments of September 2002 regarding a possible Memorandum of Understanding (MoU) with ICES, the Executive Secretary reported that ICES had requested a revisit to the subject.

Upon further evaluation during this meeting, the Scientific Council agreed there would be benefits to developing an MoU. The Scientific Council accordingly, based on the initial proposed text submitted by ICES in 2002 (GC WP 02/4), prepared a revised text to focus on the needs of the Scientific Council. The suggested text was presented by the Council to the Executive Secretary with the intention that the Executive Secretary and the ICES General Secretary will pursue the matter further. Any further development will be reviewed by the Scientific Council at the September 2003 Meeting.

XIII. OTHER MATTERS

1. **Report of 25th Session of the FAO Committee on Fisheries (COFI) Rome, Italy, 24-28 February 2003**

In accordance with the Scientific Council recommendation of 2002, the Deputy Executive Secretary attended the Twenty-fifth Session of the Committee on Fisheries (COFI) of FAO. The Executive Secretary also attended.

The Twenty-fifth Session of the Committee on Fisheries was held in Rome, Italy, from 24 to 28 February 2003. The Committee approved a Strategy for Improving Information on Status and Trends of Capture Fisheries and recommended its further approval by the FAO Council. The Committee further recommended that monitoring of the implementation of the Strategy constitute an integral component of monitoring the implementation of the Code of Conduct for Responsible Fisheries. The Committee reaffirmed the need for global implementation of measures against Illegal, Unregulated and Unreported (IUU) fishing and recommended that IUU fishing be included in the Agenda of the Thirty-second Session of the FAO Conference with a view to calling attention of Members to this issue. The Committee recognized the crucial importance of the Code of Conduct and its related International Plan of Action (IPOA) in promoting long-term sustainable development of fisheries and encouraged Members to establish and implement National Plans of Action to put into effect the International Plans of Actions on Capacity, IUU Fishing, Sharks and Seabirds. The Committee agreed that the Director-General of FAO should enter into consultation with the United Nations Secretary-General with a view to defining practical modalities for the implementation of the (Part VII) trust fund, to facilitate the implementation of the 1995 UN Fish Stocks Agreement by developing States Parties, in particular the least developed among them and small island States. The Committee highlighted the importance of aquaculture and small-scale fisheries as means to increase fishery production to generate income and foreign exchange to alleviate poverty, to increase food security and to provide for diversification of employment. The Committee identified key priority areas of work for the FAO Fisheries Department during the biennium 2004-2005 and the areas of work for its Sub-Committees on Fish Trade and Aquaculture. The Committee agreed to the convening of a number of technical/expert consultations on specific areas of fisheries, including review of progress on promoting the implementation of IPOA-IUU and IPOA-Capacity, on port States measures to prevent, deter and eliminate IUU fishing, on sea turtles interactions and conservation, on subsidies and CITES related issues for commercially exploited aquatic species.

The full meeting report, due to be approved by the FAO Council in June 2003, will be made available through by a direct link from the NAFO website.

The next meeting of COFI is scheduled for February 2005, at FAO Headquarters, Rome, Italy.

2. **Report of Regional Fishery Bodies (RFB) Meeting, Rome, Italy, 3-4 March 2003**

In accordance with the Scientific Council recommendation of 2002, The NAFO Deputy Executive Secretary attended the Third Meeting of Regional Fishery Bodies. The Executive Secretary also attended. The Deputy Executive Secretary was appointed rapporteur. The FAO Fisheries Department provided the Secretariat for the Meeting.

The Third Meeting of Regional Fishery Bodies was held on 3 and 4 March 2003 at FAO Headquarters, Rome. Participants included representatives from 27 Regional Fishery Bodies and from the Coordinating Working Party on Fishery Statistics (CWP).

The Chair (Robin Allen, IATTC), opened the Meeting and expressed appreciation to FAO on behalf of the RFB for facilitating this meeting and work during the inter-sessional period. Mr. Ichiro Nomura, Assistant Director-General, FAO Fisheries Department, addressed the participants referring to the unprecedented challenges RFB are facing, noting their role of promoting responsible behaviour in the fisheries sector. He stated that cooperation and coordination among RFB is a goal that should be fostered, and commended the RFB for having seized the initiative. FAO will seek to cooperate with RFB and complement their decisions.

From among the many items discussed (SCS Doc. 03/18) this summary focuses on the interests to the Scientific Council (see complete report of the meeting at <http://ftp.fao.org/docrep/fao/005/y4654e/y4654e00.pdf>).

Noting the RFB was scheduled for just after the FAO Committee on Fisheries (COFI), the meeting referring to the draft report of the Twenty-Fifth Session of COFI, identified the following as important to RFB:

- The value of State of the World Fisheries and Aquaculture (SOFIA), Aquatic Sciences and Fisheries Abstracts (ASFA), Fisheries Global Information System (FIGIS) and involvement of RFB
- Regional plans of action

- Role of RFB in adopting listings for fishing vessels
- Strengthening RFB, Compliance Agreement: relevant port State measures; improving and extending catch documentation; decommissioning and scrapping of vessels
- FAO's role in disseminating information about activities of RFB in deep sea fisheries
- International cooperation in making VMS more effective
- FAO guidelines on eco-labeling to include fish caught in compliance with RFB rules
- Harmonization of catch certification, noting tuna bodies are considering this
- Status and Trends reporting and strategies, roles for RFB
- Implications of the ecosystem approach to fisheries management – need for close cooperation within RFB
- Cooperation with Convention on International Trade in Endangered Species (CITES).

The Meeting discussed the issue of cooperation with CITES at length, with some participants referring to their cooperation with CITES and others expressing concern about its scientific basis for listing species on CITES appendices. It was noted that FAO members have agreed that FAO become more involved in matters relating to CITES listing with respect to commercially exploited aquatic species in consultation with RFB, and it was suggested that RFB in contact with CITES keep other bodies informed. The FAO Secretariat advised the Meeting it was prepared to continue acting as a conduit between the CITES Secretariat and RFB.

RFB noted external factors can have more significant effects on the stocks than management actions, particularly referring to pollution, river outflows, population growth, aquaculture and other man-made factors as major concerns affecting habitat modification. There was also concern about loss of genetic diversity.

The Meeting reviewed the status of partnerships between RFB and FAO, to develop Fisheries Resources Monitoring System (FIRMS) FAO presented a general introduction (see also Appendix III., Section 5 in the report on this subject). In discussion it was noted that RFB increasingly operate in a global context. One RFB was mandated in principle to join the proposed partnership, some RFB had not been approached and many will bring the matter to the attention of their members. The potential benefits to members and costs to the organization will be considered.

A number of RFB reported on their progress in implementing approaches to incorporate ecosystem considerations into fisheries management. Several RFB are engaged in ecosystem modeling to provide insight into the effects of fisheries on the ecosystem.

It was agreed that the Fourth Meeting of Regional Fishery Bodies will be held after the Twenty-sixth Session of COFI, and will take place in early March, 2005 at FAO headquarters in Rome.

3. Meeting Highlights for NAFO Website

The Chairs of each Committee submitted highlights of the meetings to the Secretariat. These will be placed on the website after this meeting.

4. Other Business

The Council discussed potential areas of funding needed for its business in 2004. The Council noted 2 upcoming events:

- a) The possible Study Group for the estimation of limit reference points under the Precautionary Approach, for the consideration of implementation of the framework.
- b) The Symposium on ecosystem considerations of the Flemish Cap.

The Council noted these events will ideally have invited experts or speakers, and the Council **recommended** that *the estimated \$10 000 should be allocated from the 2004 budget, to accommodate the costs of the 2 proposed upcoming events of the Scientific Council.*

XIV. ADOPTION OF COMMITTEE REPORTS

The Council, during the course of the meeting reviewed the Standing Committee recommendations. Having considered and endorsed each recommendation and also the text of the reports, the Council **adopted** the reports of STACFEN, STACREC, STACPUB and STACFIS. It was noted that some text insertions and modifications as discussed at the Council plenary will be incorporated later by the Chairman and the Deputy Executive Secretary.

XV. SCIENTIFIC COUNCIL RECOMMENDATIONS TO GENERAL COUNCIL AND FISHERIES COMMISSION

The Council Chair undertook to address the recommendations from this meeting and to submit relevant ones, as follows to the General Council and Fisheries Commission:

1. *the Deputy Executive Secretary attend the CWP Intersessional Meeting to be held in 2004.*
2. *a meeting of the Joint Fisheries Commission/Scientific Council Working Group on the Precautionary Approach be held to discuss the implementation of the revised PA framework.*
3. The Council discussed potential areas of funding needed for its business in 2004. The Council noted 2 upcoming events:
 - a) The possible Study Group for the estimation of limit reference points under the Precautionary Approach, for the consideration of implementation of the framework.
 - b) The Symposium on ecosystem considerations of the Flemish Cap.

The Council noted these events will ideally have invited experts or speakers, and the Council **recommended** that *\$10 000 should be allocated from the 2004 budget, to accommodate the costs of the 2 proposed upcoming events of the Scientific Council.*

XVI. ADOPTION OF SCIENTIFIC COUNCIL REPORT

At its concluding session on 19 June 2003, the Council considered the Draft Report of the meeting, and **adopted** the report with the understanding that the Chair and the Deputy Executive Secretary will incorporate later the text insertions related to plenary sessions of 5-19 June 2003 and other modifications as discussed at plenary.

XVII. ADJOURNMENT

There being no other business, the Chair thanked the members of the Scientific Council for their diligent work and cooperative spirit, noting especially the contributions by the Committee Chairs and the Designated Experts. After expressing special thanks to the NAFO Secretariat for their continued support and dedication, the Chair of the Scientific Council wished all members safe travels. The meeting was adjourned at 1145 hours on 19 June 2003.